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MONTANA VALIDATION OF THE NTE  
CORE BATTERY: STUDY REPORT

Submitted to the Board of Public Education  
January 30, 1986

by

Dr. Alan G. Zetler  
Validation Contractor

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## Acknowledgements

The decision to use the NTE Core Battery as a certification requirement in Montana represents a major policy direction with ramifications impacting all levels of the state education system. Validating the tests presented an opportunity for professionals from many of these levels to be involved in the policy's application.

Support was evident from the State Board of Public Education, Office of Public Instruction, higher education, professional organizations, county and district administrators and classroom teachers. Released time and support was made available to actual validation participants. The response to nominations was indicative of state interest in the project.

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## Preface

The following report is designed to satisfy legal and educational demands that arise when a test for teacher certification is adopted by a state. General methods of test validation known to be acceptable have been applied to the specific Montana context. Quantitative results and conclusions are derived from empirical procedures based on the judgments of qualified professionals.

The report traces the execution of a study in content validity. Readers and decision-makers are reminded that the NTE Core Battery tests selected areas of academic knowledge and neither measures nor predicts other qualities necessary for effective teaching.



## CHAPTER I

### Montana Validation of the NTE Core Battery: The Study Process

#### 1. Rationale

Applicants for Montana teaching certificates granted after July 1, 1986 will have to exhibit evidence of having attained minimum qualifying scores on all three areas of the National Teacher Examination Core Battery. The Montana State Board of Public Education has certificate authority in the state. By adopting the NTE Core Battery as one condition for certification, the board is in a position to grant or deny occupational entrance into the state's professional ranks.

The imposition of the test criterion has a concomitant obligation, however. The courts have held that teacher testing may be used as a condition of certification providing the instrument's content validity is verified and the passing scores adopted show evidence of having been empirically established. Additionally, a test must possess relevance to the job demands required to practice in the particular state or locale in which it is to be applied.

The process of determining validity, relevance and minimum qualifying scores is known as "validation." Procedures used in validation are designed to satisfy both legal and educational demands. Thus, this study was undertaken to validate the NTE Core Battery for certification purposes, applicable to the population of Montana candidates who will be impacted by the test's utilization.



## 2. The Core Battery Described

Most standardized tests used for teacher certification are designed as general instruments by commercial test publishers. Notable among publishers is Educational Testing Service (ETS) which is responsible for two commonly used examinations, the Pre-Professional Skills Test (PPST) and the National Teacher Examination (NTE). A Core Battery and twenty-seven subject tests are the two measurement areas covered by the NTE.

The Core Battery tests academic knowledge in three preparation areas common to college teacher education programs; communication skills, general knowledge and professional knowledge. Each area is composed of subtests individually designed around stable, defined content topics. The emphasis remains constant regardless of the test edition used.

Communication skills is measured by four subsections covering essay writing, listening, reading and multiple-choice writing. General knowledge samples content usually associated with college liberal arts cores - Literature and Fine Arts, Mathematics, Science, and Social Studies. Professional knowledge has three sections which collectively focus on the behavioral, foundations and methods content of teacher education programs.

Six hours are required to take the exam. Montana applicants who fail any of the three areas will be allowed to retake the failed portion, with no limit on retakes currently specified.



### 3. Purpose of the Validation Study

Legal and educational purposes drive the validation study. These purposes can be condensed into three questions which can be asked of Montana's intention to use the NTE Core Battery for certification.

1. Is the content tested by the NTE Core Battery relevant to the job requirements needed by a beginning teacher in Montana?
2. How well does the content measured by the NTE Core Battery match the content of teacher education programs offered in Montana?
3. What estimated knowledge scores should the state expect of a minimally qualified candidate on communication skills, general knowledge and professional knowledge?

Collectively, the questions address the issue of fairness to the candidates balanced against the minimum level of performance needed to protect the state's interests.

### 4. Study Procedures

Validation studies of the type designed for Montana have to take place before any actual performance data is available. Given the absence of normative test results, the validation must instead be criterion - referenced. This procedure is acceptable both educationally and legally when the judgments of representative experts are used to determine criterion levels.

Expert judgment was the premise for the Montana study, a practice consistent with legal precedent, other states' experiences and ETS guidelines. The raw data needed to research the three questions were collected from public school and higher education professionals using a structured response format.



Analysis of data relied on procedures shown to be established by precedent or justified by rational thought. Previous validity reports and guidelines supplied by ETS provided the framework for much of the analysis.

Interpretation of results was a study phase in which data analysis had to be evaluated in a comparative context specific to probable impact on the Montana certificate population. Study results underwent a tempering influence. An advisory forum of Montana educators, versed in educational measurement, interpreted quantitative and qualitative results. Consequently, a firm set of recommendations, drawn from a range of options, was made ready for State Board consideration.

#### 5. Limitations of the Study

The Montana validation study was designed to accomplish specific purposes. Study results and conclusions are limited in application and are not suitable to educational problems for which the study was not intended. Use of the study for purposes other than those included in the following statement would be inappropriate:

The Montana validation study was executed for the expressed purposes of (a) generating certification recommendations about NTE Core Battery use to the Montana State Board of Public Education, (b) judging the content validity and job relevance of the NTE Core Battery as an instrument to measure the academic knowledge of Montana certificate candidates, and (c) insuring to the highest degree possible that study scores have been empirically determined by procedures that are legally and educationally defensible.



## CHAPTER II

### Review of the Literature

#### 1. Introduction

Validation of the NTE Core Battery was premised on a design that made use of a defensible precedent where possible. Lacking that guidance, rational justification prevailed. Specific purposes were stated for which distinct procedures were employed. Conversely, the study was limited in its purposes and design, with an implied admonition to confine results and interpretation to intended parameters.

Chapter II will define precedent setting experiences, the principles of study design involved and, if appropriate, the legal rationale involved. The review of literature concludes with information for which there is no empirical Montana data - the possible impact of the NTE on minority Montana Native American candidates.

#### 2. Why Validation?

Teacher testing for certification is but one use of occupational tests. Individuals have a right to pursue occupations under due process of law. On the other hand, states can reasonably regulate entry into the occupation, or maintenance therein, as a means of protecting the public. In a reversal of prior practice, Griggs v. Duke Power Company (1971) established that employment tests had to measure skills actually needed for a job when the test's impact was adverse to population groups protected by the Civil Rights Act of 1964.

NTE scores, as a requirement for hiring or retention at the district or county level, were argued in the courts during



the early 1970's. The landmark case important to Montana's certification purpose was United States v. South Carolina (1977). South Carolina's use of NTE tests for certification was challenged but eventually upheld by the U.S. Supreme Court.

Several findings arose from the South Carolina decision:

1. The state can use the test (NTE) to certify teachers.
2. "The state has the right to adopt academic requirements and to use written tests designed and validated to disclose the minimum amount of knowledge necessary to effective teaching." (ETS, 1982)
3. The NTE tests in that state were shown, in themselves, not to discriminate on the basis of race. Furthermore, there was no intention of the test to do so.
4. Through a validity study conducted by ETS, the test instrument was shown to possess content validity. The study utilized the panel approach for making judgments.

Digested from patterns of case law up to and including South Carolina were several guidelines for other states wishing to test for certification: (a) standardized tests can be used; (b) content validation must be performed; (c) job relevance must be evident; (d) judgments of minimally qualified candidates' anticipated performance (knowledge estimation) is acceptable; (e) the pooled judgments of qualified persons representative of the professional population is a proper vehicle for validity studies; (f) in the absence of intended discrimination, test results can be uniformly applied to all groups, including minorities.

If proper procedures are followed, users of the NTE can be reasonably assured that their practices and adoptions will



be consistent with the Uniform Guidelines for Employment Selection Procedures (EEOC, 1978) and the Standards for Education and Psychological Tests (APA, 1974). These documents are standards by which to legally evaluate employment criteria and practices.

### 3. Validity Study Procedures

Given ample precedent, there seems to be no need for states to experiment except where design, geographical or budget limitations are unique. Numerous documents show a consistency among states who validated the NTE or other test instruments (Kansas, 1984; Maine, 1984; Maryland, n.d.; California, 1983; Barnes-Nevada, 1985). Full validation reports such as New York (ETS, 1983) detail state studies done with or without direct ETS involvement. Recently, ETS prepared a draft manual of procedures (ETS, 1985) designed specifically for NTE tests. The publication incorporates the suggestions of collective wisdom but cautions, "No single process leading to the setting of standards for certification is generally acknowledged by professional educators and measurement specialists as the only defensible method or even the best method for conducting this type of study."

The use of panel reviews has been employed by all states which have conducted validity studies for teacher testing since the South Carolina experience (ETS, IIB1).

Job relevancy asks panelists to classify test question content as "crucial," "important," "questionable" or "not relevant." The judgments are made by public school teachers, a procedure reported by Radbil (1983) about the New Mexico study.



In addition, content review in that state was conducted by college panelists from eight institutions, a number equal to that found in Montana. Criteria for determining content appropriateness were also used by New Mexico, according to Radbil, as were the questions of relevancy and content appropriateness posed for the essay test.

"Standard setting" (Angoff, 1971) is a term that, when used in the context of the Montana study, refers to the panel judgment method of assessing the probable test performance of certification candidates who are minimally qualified. A modification of the Tucker/Angoff method, reported by Livingston and Zieky (1982) seems well supported by the literature as a defensible procedure for use on multiple choice items. Essay samples divided into two classifications, qualified (passing) and unqualified (failing) and then matched to a scale of quality is one of several acceptable standard setting procedures for that Core Battery component (Livingston and Zieky, 1982). Recently, research has addressed the variations and modifications made on standard setting procedures, but a succinct ETS (1983) statement supports the method employed in the Montana study:

"The standard setting studies reviewed here do not suggest that any one panel review approach is superior. It does support the continued use of the Tucker/Angoff approach, however, because that method demonstrated reasonable psychometric properties, because it is relatively easy to apply, and because it capitalized on a decision-making approach that is similar in many ways to the one used by teachers in their normal professional activities."



#### 4. Impact of Certification Testing on Minority Groups

As of September, 1985, twenty-two (22) states used some type of certification testing, sixteen (16) of those utilizing some portion of the NTE Core Battery. Patterns of performance by white and minority test takers has been studied, the results of which vary according to whether the study purposes were broad or narrow.

Tests are used for purposes in addition to certification. Garcia (1985) obtained pass/fail data from eleven states which also supplied ethnic information about testing for a variety of purposes. His summary is reproduced as Table 2-1.

Table 2-1

##### Pass/Fail Rates by Ethnic Group

State/ Purpose	White		Black		Hispanic		Other	
	Pass	Fail	Pass	Fail	Pass	Fail	Pass	Fail
AZ 1	80	20	44	56	56	44	70	30*
AZ 2	99	1	91	9	96	4	68	31*
CA 1	76	24	30	70	38	62	-	-
CA 5	76	24	30	70	38	62	-	-
CO 1	98	2	95	5	97	3	-	-
FL 2	90	10	40	60	55	4	-	-
FL 4	95	5	90	10	-	-	-	-
GA 5	94	6	54	46	-	-	-	-
MS 1	70	30	40	60	-	-	-	-
NC 2	97	3	72	28	-	-	-	-
NC 3	97	3	72	28	-	-	-	-
NC 5	97	3	72	28	-	-	-	-
OK 3	78	28	45	55	71	29	70	30**
OR 1***	70	30	-	-	10	90	-	-
SC 4	100	0	100	0	-	-	-	-
NM 1	58.8	41.2	42.2	57.8	42.2	57.8	42.4	57.8**
NM 2								
Comm Sk	97.7	2.3	50	50	92.5	7.5	60	40**
Gen Kn	97.6	2.4	80	20	88.2	11.8	50	50**
Prof Kn	- Insufficient sample							

\*Other - Asian Americans

\*\*Other - Native American

\*\*\*First attempt to obtain pass/fail rates, small sample



- Purpose 1. Admission into Teacher Education
- Purpose 2. Professional Education (Pedagogy)
- Purpose 3. Academic
- Purpose 4. On-the-Job Performance
- Purpose 5. Certification

Only Oklahoma and New Mexico in the Garcia data have any information on Native Americans, that minority composing the largest non-white group of Montana certified personnel.

New information was supplied by New Mexico in December of 1985 (Hall, 1985) via phone inquiry. Their experience is summarized by selected categories in which they gathered data (Table 2-2).

Table 2-2

In-State New Mexico Ethnic Passing Rates for NTE  
Core Battery for year 1983-1984 (First Year Used)

	<u>Anglo</u>	<u>Hispanic</u>	<u>Native American</u>
Communication Skills	96.3%	81.2%	62.5%*
General Knowledge	93.2%	73.0%	62.5%*
Professional Knowledge	99.8%	96.4%	100%*

\*Sample of five (5) persons

Out-of-State New Mexico Ethnic Passing Rates for NTE  
Core Battery 1983-1984

	<u>Anglo</u>	<u>Hispanic</u>	<u>Native American</u>
Communication Skills	97.0%	81.3%	50.0%*
General Knowledge	94.4%	61.2%	58.3%**
Professional Knowledge	99.7%	97.6%	100%***

\* 6 persons sampled

\*\* 7 persons sampled

\*\*\* 11 persons sampled

Montana had 262 certified Native American teachers in FY 1985 out of 17,466 total, or a rate of 1.5% of the professional population (Appendix A). The data is too sparse in the literature to suggest actual numerical impact on the Montana



Native American certificate candidates. Resorting to generalizations is risky, but if one takes all Native Americans as a group and examines their performance on all types/purposes of competency tests, passing rates range from 19 to 100% whereas passing rates for Anglos under identical conditions range from 62 to 100% (See Appendix B).

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## CHAPTER III

### Design of the Study

#### 1. Introduction

The Montana validation study was designed to generate appropriate recommendations regarding use of the NTE Core Battery for certification purposes in the Montana jurisdiction. The study was consistent with NTE policy guidelines, applicable legal standards, State Board policy and Office of Public Instruction guidelines.

Validation of the NTE Core Battery served to (a) assess the degree to which the battery was a valid match with those components of Montana teacher preparation programs it intended to measure, (b) assess the relevance of the battery to the job of a beginning Montana teacher, and (c) establish a recommended cut score for each test area based on the performance expected of minimally qualified Montana candidates. These purposes were accomplished by utilizing the judgments of qualified professionals operating under standard conditions and procedures.

#### 2. Overview

The study design called for five discrete operations:

1. Structuring three panels of qualified educators capable of rendering judgments on the NTE Core Battery. These three panels were known as content review, job relevance, and knowledge estimation, respective to the three validation purposes. The released edition of the NTE was the test instrument examined and the process thus known as a "single form" validation.

2. Convening panels at three locations in September and October of 1985 at which time training and actual test review was performed and recorded.



3. Analyzing the judgment data generated by the three panels.

4. Interpreting the data and establishing recommended minimum scores for State Board consideration for the tests of communication skills, general knowledge and professional knowledge.

5. Writing a full report, including background, literature and other information useful to the State Board in the defense of its cut score adoption.

### 3. Structure of Panels

Panel members should be professionals qualified for the task and be representative of teacher training and certified elementary and secondary staff. Overlaying these general features are characteristics of the certified population according to sex, ethnicity, school size and geography.

The Montana study utilized a total panel of 72 individuals, divided among three locations; Missoula in the west, Great Falls in central Montana, and Billings in the east. Content review panelists came from a pool representative of the state's five public and three private teacher training institutions. Job relevance panel members were representative of in-service teachers and administrators at both elementary and secondary levels. Both categories joined to constitute the knowledge estimation panel.

On August 22, 1985, an advisory forum composed of persons with recognized interests in Montana education convened (Appendix C). The forum agenda had two primary goals; (a) provide the names of organizations and agencies that would nominate potential panelists, and (b) delineate the biographical data that should be collected from nominees so that



the eventual panelists selected would possess appropriate qualifications.

The nomination deadline for panel members was September 13, 1985, with selection and notification completed by September 25. Using the chosen number of 72 individuals, persons were selected to serve on panels as shown in Table 3-1.

Table 3-1

Panel Size and Review Duties: Montana Validation  
(Site Sizes in Parentheses)  
(Individuals judged all three parts of the Core Battery)

<u>Test</u>	<u>Content Review</u>	<u>Job Relevance</u>	<u>Knowledge Estimation</u>
Communication Skills	36 (12)	36 (12)	72 (24)
Listening			
Reading			
M-C Writing			
Essay			
General Knowledge	36 (12)	36 (12)	72 (24)
Lit & Fine Arts			
Mathematics			
Science			
Social Studies			
Professional Knowledge	36 (12)	36 (12)	72 (12)
Section 1			
Section 2			
Section 3			
TOTALS	36	36	72

Panel members were expected to judge all subtests within each of the Core Battery classifications and also participate in knowledge estimation. Such a schedule demanded that members be generalists and willing to commit themselves to the tedious job. This intensive approach to committee work is usual for Montana. Commuting distances are impractical, resulting in a practice of long hours and overnight accommodations. Remuneration for mileage and per diem at Montana state rates



was paid to panel members. To compensate for possible fatigue, the hours at which tests were examined was altered among the three locations.

Alternate panelists for each meeting site were selected. Alternates had the additional qualification of residing as close as possible to one of the three sites so as to be quickly available.

It was understood that panelists may not have had equal responsibilities in preparing for their tasks. For example, college panelists had to be particularly well versed on course objectives and syllabi that could be selected by students to satisfy teacher education requirements.

#### 4. Convening Panel Meetings and Gathering Data

Approximately one-third of the panelists were designated for one full day in each location in an attempt to minimize mileage and days off the job. Instructions and job descriptions were mailed to those selected.

Test materials were supplied by ETS and used in the morning training sessions and throughout the day. Logistical suggestions gathered from ETS personnel and from other states' validation directors were utilized. Standardization of conditions and methodology was the responsibility of the project contractor. Test security was not monitored by ETS on-site because the released edition of the NTE was used, although the released tapes, essays and other material supplied by ETS were accountable.



Response data sheets contained sufficient information to trace each task according to respondent as well as record judgments.

Knowledge estimation made use of a modified Angoff approach. Panelists selected probabilities for borderline test takers using a scale somewhat altered from that suggested by Livingston and Zieky (1982), whose procedures have become standard methodology in previous validation studies.

The panel size made it imperative that all data sheets be usable and properly marked, although in a collective sense, Montana had more panelists per subtest than some other states. To assist with logistics, monitoring of progress and check-in of all documents, a recording secretary was retained for the meeting dates.

## 5. Analyzing the Judgment Data

Data was compiled on tabular sheets where possible to permit tracing of analysis. Panelists' judgments were aggregated into distributions, otherwise tabulated and statistically analyzed to yield the following information directly from raw data:

### Job Relevance:

- a. Distribution, by item, of the four relevancy response frequencies; applied to each subtest.
- b. N counts of relevance response categories by subtest.
- c. Judgment of essay skills relevancy.



#### Content Review:

- a. Distribution, by item, of the three responses used to judge test content/program content match; applied to each subtest.
- b. N counts of content response categories by subtest.
- c. Judgment of essay skills exposure opportunity.
- d. Judgment of Core Battery topic emphasis as compared to panelists' institutional emphasis.

#### Knowledge Estimation:

- a. Distribution, by item, of the percentage estimate responses; applied to each subtest. Mean and standard deviation calculated by item.
- b. Estimation of acceptable essay quality on a 12-2 descending scale.

Distribution information was further quantified into indices, percentages, proportions or other appropriate comparative scales. Knowledge estimation percentages were transformed into scaled scores (reporting scores) by procedures that accounted for guessing, irrelevant items, non-content appropriate items and weighting factors specific to the Core Battery. Details of analysis procedures are explained in Chapter V.

### 6. Interpreting the Data

The convergent purpose of the Montana validation study was the use of judgment data to arrive at recommended qualifying (cut) scores for initial certification. The State Board of Public Education has the responsibility for setting the minimum scores as one facet of its certification process.



Interpretation demanded the blending of data analysis, sound principles of educational measurements and a knowledge of the Montana context. The advisory forum again convened to provide input. Interpretative data supplied by ETS indicated what proportion of candidates would be expected to pass for any score chosen.

Several factors affect a candidate's test score. Among these are the content validity of the test item, the standard error of measurement for the instrument, variation among preparation programs and human elements affecting test reliability. One or more of such factors may call for adjustments on the cut scores resulting from this study. The risk of rejecting qualified applicants and accepting unqualified applicants for given cut scores is both an educational and human political consideration. These factors were woven into advisory forum discussions before recommendations were crystalized. It was assumed the impacts of cut scores would be further discussed as part of the interpretation step and certainly would be a factor in the State Board's decision.

An essential ingredient in interpretation is the comparative placement of Montana's study and adopted qualifying score relative to other states. Such information was supplied by ETS and served as a "reality check" by which to evaluate both study results and the recommendations forwarded to the Board.



## CHAPTER IV

### Execution of the Study

#### 1. Structuring the Panels

One hundred five (105) letters soliciting panel nominees were mailed to two categories of recipients, the elementary-secondary sector and higher education. From these two groups came nominations used to fill the job relevance and content review panels, respectively. All members from both groups combined became the larger knowledge estimation pool.

#### Job Relevance Panel

Letters of request were sent to 97 different individuals or agencies representing a range of interests in Montana elementary and secondary schools. Individuals/agencies targeted for requests are shown as Appendix D. Subdivisions within agencies may not show as a nomination source. Likewise, individuals who sought information for themselves but who had no defined affiliation were mailed nomination letters and were not categorized on the mailing list. The form letter used for solicitation is contained in Appendix E.

If individuals or agencies outside the selected channels chose to submit names, those nominations were accepted. Two school districts used this method. Some persons were nominated several times but were counted as only one nominee.

Responses to the request resulted in the nomination of 643 (Appendix F) different individuals from among approximately 700 elementary/secondary teacher and administrator names submitted before allowing for duplication. Each nominee was



mailed a response form containing validation information (Appendix G) and a request for bibliographical data (Appendix H) that was to be returned only if the person was willing and able to secure released time from school duties.

Nominee response forms were returned by 315 persons, a return rate of 51 percent. Response forms were numbered consecutively in the order received. No attempt was made to match response forms to the nominating source or to otherwise cross index. Two response forms were returned after the deadline and were not used in the subsequent random selection process. Several letters expressing appreciation for the nomination but declining to serve were noted. Eight "Return to Sender" envelopes were received.

#### Selection of Job Relevance Panelists

It was anticipated that willing and able respondents would exist in the same proportions as the number of active Montana certificate holders in various categories so that random selection would yield a representative sample. Therefore, no attempt was made to cull any respondents prior to random selection in order to achieve desired proportions. Instead, response sheets were separated by school district enrollment size as a controlled variable and then randomly drawn. School district size was selected as the control variable because it was the one category whose subdivisions



would be most apt to contain representation of each of other desired variables.

District size was divided into four quarters, each quarter composed of school districts serving one-fourth of the pupils being educated in Montana public schools.

The state enrolled 154,412 pupils in FY 1985. The first quarter of that number, or 38,603 attended schools in the smallest school districts. Specifically, Cooke City with one pupil started the pupil accumulation count which ranged up through the Fairview district enrolling 560 pupils. Nine teachers and/or administrators (one-fourth of 36) were randomly chosen from this district size category.

The second quarter of 38,603 attended district sizes starting with Lolo Elementary ranging up through Laurel. Nine panelists were selected from this category.

Nine more panelists came from the third category, bordered by the Livingston district through the larger Butte system.

Finally, nine panelists were selected from Helena, Great Falls, and Billings, who collectively enroll one-fourth of Montana public school pupils in those three large districts. The FY 1985 statistics by enrollment and district size were available through the Office of Public Instruction and reflect enrollments for the 1984-85 school year. See Appendix I for computer printout information.



With the control for the employing district size in place, random selection was effected using a table of random numbers. The last three digits in each of the published five place numbers were utilized to match the three digit numbers stamped on the nominees' response forms. Those randomly selected numbers are shown as Appendix J.

Thirty-six panelists were selected by the described procedure. After examination, two of the selections were discarded because of insufficient address information and replaced with two others randomly selected from within the appropriate size(s) category.

Dependent variables of ethnicity, gender, certificate level, and staff function (teachers or administrators) were tabulated after selection. These variables were supplied by the responding nominees if they so chose to provide the information. Comparisons were then made with the percentage of Montana certificate holders falling within these variables for FY 1985. (Appendix A) Table 4-1 shows the actual number of panelists chosen in the five variable categories as compared to the ideal numbers. Some minor variations from ideal to actual were noted, but the selections were left intact because attempts to correct the female/male discrepancy would probably have altered the closeness of the remaining counts. Geographical distribution by county is visualized as Figure 4-1.



Table 4-1  
 Number of Teachers/Administrators Serving as Job  
 Relevance Panelists in Five Categories Compared  
 to Montana Active Certificate Holders FY 85

<u>Ethnicity</u>	<u>Category</u>	<u>Montana** Percentages</u>	<u>Panelists Planned</u>	<u>Panelists Chosen</u>	<u>Actual Panelists Participating</u>
White		98.11	34	33	27
American Indian & Native Alaskan		1.50	1	2	2
Asian & Pacific Islander		.13		0	0
Black, Non-Hispanic		.06		0	0
Hispanic		.20	1	0	0
Non-Specific		0.00		1	1
<u>Gender</u>					
Female		54.52	20	18	17
Male		45.48	16	18	13
<u>Certificate Level</u>					
Elementary		49.69	18	17	14
Secondary		50.28	18	19	16
Other		.03	0	0	0
<u>Staff Function</u>					
Teachers		87.35	31	30	25
Administrators		12.65	5	6	5
<u>School Size (# of pupils served in Montana)</u>					
1st Quarter (Smallest Districts)		25.00	9	9	9
2nd Quarter		25.00	9	9	8
3rd Quarter		25.00	9	9	7
4th Quarter (Largest Districts)		25.00	9	9	6

\*\*Active certificate holders totaled 17,466

\*\*Source: Office of Public Instruction Certified Personnel  
 Report FY 85



Each of the job relevance panelists was assigned a meeting site at Missoula, Great Falls, or Billings. In most cases, panelists were able to attend the site nearest their homes. A full day of travel prior to the meeting plus a full day of travel afterwards was the extreme distance situation.

#### Content Review Panel

The deans/directors of teacher education in the five public and three private higher education institutions took the responsibility for conducting an internal search for content review panelists. From a total of thirty-six (36) content review panelists desired, it was necessary to find university and college faculty and administrators who would have perspective on all three areas of the Core Battery. The validation contractor personally contacted each Dean/Director and discussed numerical guidelines. Each program was to be minimally represented by at least one, hopefully more, panelist and consideration given to the candidate production. Table 4-2 shows the number from each college or university planned for and chosen. No external selection process was necessary.



Table 4-2

Number of College Personnel Serving as  
Content Review Panelists

<u>Institution</u>	<u>Number of Personnel Planned and Chosen*</u>	<u>Actual Participation</u>
Carroll College	3	1
College of Great Falls	4	4
Eastern Montana College	4	4
Montana State University	8	6
Northern Montana College	4	4
Rocky Mountain College	3	3
University of Montana	6	6
Western Montana College	<u>4</u>	<u>4</u>
TOTAL	36	32

\*Each institution selected internally the personnel they felt could best address content review on all the Core Battery tests.

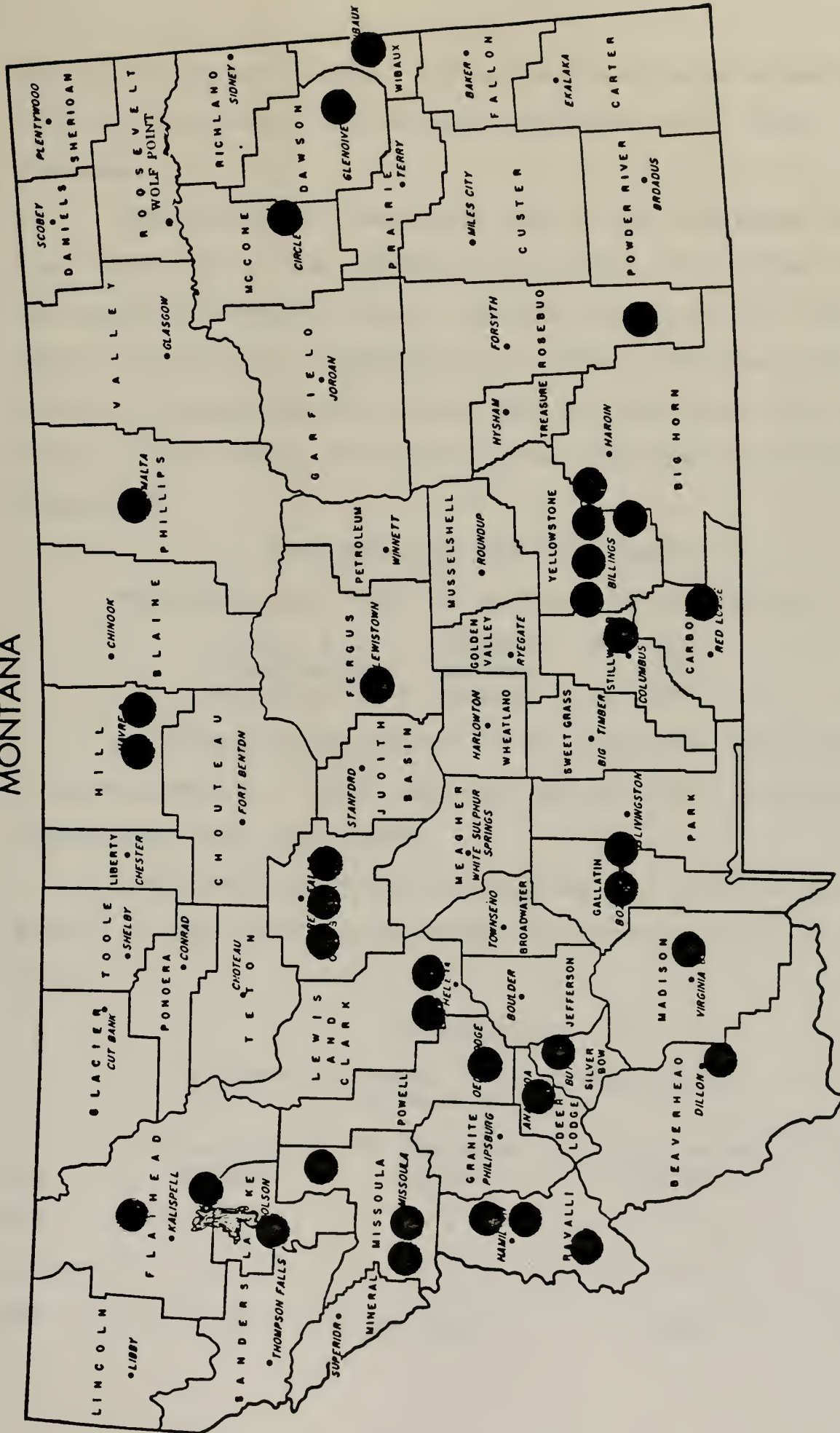
As expected, content review panelists came primarily from professional education departments; 83 percent (83%) to be specific. The small panel size (36) did not permit specialists to be drawn from each of the specialties found in the Core Battery. Thus, professional education faculty were those best qualified to address the "general" nature of the test. ETS also noted that professors who deal with student teachers have the desired configuration of qualifications.

Knowledge Estimation Panel

The design of the Montana Study called for knowledge estimation by a total of seventy-two (72) panelists. This total was the result of the thirty-six job relevance panelists



# MONTANA





and the thirty-six content review panelists also assuming the task of knowledge estimation concurrent with their first function.

The seventy-two panelists chosen for knowledge estimation came from the elementary/secondary and from higher education in numbers and by variable categories as shown in Tables 4-1 and 4-2, respectively. These individuals are, of course, the same persons listed for job relevance and content review. Their names and professional employment are found in Appendix K.

## 2. Panel Meetings and Participation

Three meetings were held on the following dates:

Missoula	-	September	30, 1985
Great Falls	-	October	7, 1985
Billings	-	October	14, 1985

Approximately one-third of the panelists were assigned to each location. Travel was kept minimal, and the same test copies were used three times.

The number of panelists expected and actually participating at the three sites showed the pattern found in Table 4-3:

Table 4-3

Planned and Actual Panel Participation  
by Meeting Site

<u>Site</u>	<u>Job Relevance Planned</u>	<u>Job Relevance Actual</u>	<u>Content Review Planned</u>	<u>Content Review Actual</u>
Missoula	12	12	13	13
Great Falls	11	6	11	8
Billings	13	12	12	11
	<u>36</u>	<u>30</u>	<u>36</u>	<u>32</u>



Sixty-two (62) panelists participated out of the planned total of seventy-two (72), an eighty-six percent (86%) turnout. An early snowstorm on October 6-7-8 was responsible for the eight absentees at the Great Falls meeting. The public college and university people at Billings gave up a holiday (October 14) to participate.

Subtracting the eight storm-related absentees and two no-shows, the sixty-two (62) participating panelists still compared to planned categorical percentages remarkably well. In fact, the actual participation in job relevance by gender was closer to desired proportions than were the numbers chosen by random selection. These participation comparisons can be seen in the extreme right hand columns of Table 4-1 and 4-2.

Of course, the knowledge estimation panel planned for 72 was reduced by the same figure of 10, or the sum of the six and four deficiencies occurring in job relevance and content review.

Meetings started at 9:00 a.m., took a one hour lunch break, and concluded for individuals between 3:30 and 5:00 p.m. Instructions and information by the validation contractor consumed part of the first hour. The sequence of working on the various test sections was staggered among the test sites. This was done to minimize the effect of fatigue on any one test.

As per suggestion from Gary Echternacht (ETS) and others familiar with validation, panelists performed either job relevance or content review and then moved directly to knowledge



estimation before passing on to the next item. The forms were designed to facilitate this time-saving method.

All panelists performed two functions on each of the 339 multiple choice items, and evaluated fourteen (14) sample essays for pass/fail quality (Appendix L). Copies of the test specifications (Appendix M) were supplied to each panelist for their retention. Written comments were solicited with particular emphasis on cultural bias and missing test content.

College and university personnel were given the additional task of judging relative emphasis existing within their programs as compared to the Core Battery concepts and test percentage emphasis stated by ETS (Appendix M and N). This judgment was the last task of the day for content reviewers.



## CHAPTER V

### Analysis of Study Data

#### 1. Disposition of Data

At the conclusion of the third meeting, data sheets were combined to form a single data base devoid of the classification variables used to insure a representative sample of professional educators. Job relevance judgments were processed as a group as were content review judgments. Knowledge estimation performed by job relevance reviewers and that performed by content reviewers were processed separately, a step which was not necessary to the study but which was interesting as an incidental comparison. The combined knowledge estimation ratings became the raw data which led to study scores and eventual qualifying score recommendations.

Appropriate distributions, statistics, and printouts were processed with a computer program written by John Hammond, Specialist at Western Montana College. Appendix O gives information by which that output can be traced.

#### 2. Extent of Test Items Judged

Montana validation made use of the first edition of the NTE Core Battery. That edition has been classified by ETS as "released" and is no longer in use. Instead, candidates take one of several later editions during actual test conditions. Test specifications are similar for all editions, however, as are the ETS scaled test score reporting procedures.

The released test edition was composed of 339 multiple choice items plus 70 sample essays. Copies of the test and



essays were supplied by ETS for the Montana validation project. The number of items contained in each subtest of the Core Battery shows as Table 5-1.

Table 5-1  
Number of Items Judged: Released Edition

<u>Test</u>	<u>Number of Items</u>
Communication Skills	
Essay	N/A (70 sample essays)
Listening	40
Reading	30
Writing-MC	45
General Knowledge	
Lit & Fine Arts	35
Mathematics	25
Science	30
Social Studies	30
Professional Knowledge	
Section 1	35
Section 2	34
Section 3	35
TOTAL	<u>339</u>

### 3. Analysis of Job Relevance

Job relevance addressed the question, "Is the test item(s) content relevant to the job of a beginning Montana teacher?" Judgments were made by educators drawn from the elementary and secondary ranks of teachers and administrators.

Items Classified: It is possible that some panelists will not make a judgment about a particular item. Should a majority of panelists not choose to judge, that item is called "not classified" or incapable of being used for a relevance decision.

Table 5-2 shows that Montana panelists had no problem judging the relevance status of Core Battery items. All items are "classified".



Table 5-2

Number of Items Analyzed and Number Classified  
with Regard to Job Relevance: Released Test Edition

<u>Test</u>	<u>Number Analyzed</u>	<u>Number Classified</u>	<u>Not Classified</u>
Communication Skills			
Essay	N/A	N/A	N/A
Listening	40	40	0
Reading	30	30	0
Writing-MC	45	45	0
General Knowledge			
Lit and Fine Arts	35	35	0
Mathematics	25	25	0
Science	30	30	0
Social Studies	30	30	0
Professional knowledge			
Section 1	35	35	0
Section 2	34	34	0
Section 3	<u>35</u>	<u>35</u>	<u>0</u>
TOTAL	339	339	0

Relevancy of Test Items: Job relevance panelists were asked to judge each test item's relevancy for the job of a beginning Montana teacher. Items were checked on one of four levels - critical, important, questionable, or not relevant. Critical or important judgments are classified as relevant, following ETS guidelines, and questionable or not relevant judgments are classified not relevant. A simple majority count determined placement in either category. Based on this scheme, 326 items were judged relevant and 13 not relevant.

Literature and fine arts was the subtest gauged most not relevant, but unless the percent of acceptable items drops



below seventy percent (70%), again by ETS guidelines, there is little concern, even though a second stage of examination would be in order. Table 5-3 details the relevance judgments for Montana.

Table 5-3

Numbers of Items Classified with Regard to  
Job Relevance and Numbers Judged  
Relevant or Not Relevant by Total Panel

<u>Test</u>	<u>Relevant*</u>	<u>Not Relevant</u>	<u>Percent Relevant</u>
Communication Skills			
Essay	N/A	N/A	N/A
Listening	40	0	100
Reading	30	0	100
Writing-MC	45	0	100
General Knowledge			
Lit and Fine Arts	30	5	85.71
Mathematics	25	0	100
Science	29	1	96.67
Social Studies	27	3	90.00
Professional Knowledge			
Section 1	34	1	97.14
Section 2	33	1	97.06
Section 3	<u>33</u>	<u>2</u>	<u>94.27</u>
TOTAL	326	13	96.09%

\*Item relevant if over 50 percent of judgments were  
"crucial" plus "important."

The pattern generated by Montana teachers and administrators in placing test items into one of the four job relevancy categories can be seen in Table 5-4. "Important" was clearly the highest response marked.



Table 5-4

Job Relevance Judgments Classified by Percent in  
Response Categories by Total Panel (N=30)

<u>Test</u>	<u>Relevance Categories</u>			
	<u>Crucial</u>	<u>Important</u>	<u>Questionable</u>	<u>Not Relevant</u>
Communication Skills				
Essay	N/A	N/A	N/A	N/A
Listening	23.01	63.61	12.35	1.00
Reading	20.41	65.61	12.97	1.01
Writing-MC	24.55	63.63	11.45	0.38
General Knowledge				
Lit and Fine Arts	8.40	64.89	23.38	3.34
Mathematics	27.31	58.50	12.99	1.20
Science	20.89	58.00	19.56	1.56
Social Studies	15.21	61.97	19.69	3.13
Professional Knowledge				
Section 1	34.13	49.48	15.54	0.86
Section 2	30.23	52.50	15.21	2.06
Section 3	26.10	55.90	15.90	2.10

Essay Relevancy: Essay samples were supplied, fourteen to each panelist with all 70 samples thus distributed among panel members. Reviewers had to judge the essays holistically (as a whole). Some reviewers expressed frustration with this method, being more comfortable with specific criteria. Nonetheless, they were asked to assess whether the holistic array of writing skills tested through the essays were needed to teach in Montana. Their responses are summarized in Table 5-5.



Table 5-5

ESSAY: Number and Percent of Job Relevance  
Reviewers Judging Relevancy for Essay Skills

Question: Are the writing skills tested through  
such an essay relevant to the writing  
skills needed to teach in the public  
schools of Montana?

		<u>Number</u>	<u>Percentage</u>
Response:	Yes	28	93.33
	No	2	6.67
No Response:		<u>0</u>	<u>0</u>
	TOTAL	30	100.00

Table 5-6 is included as a quick summary of Montana job  
relevance, the table designed as an alternate compilation of  
selected results from previous tables.

Table 5-6

Summary of Job Relevance Results

<u>Test</u>	<u>Number of Items Judged Relevant To Total Items</u>	<u>Percent of Items Judged Relevant</u>
Communication Skills		
Essay	See Table 5-5	See Table 5-5
Listening	40 of 40	100
Reading	30 of 30	100
Writing-MC	45 of 45	100
Test Area Total	<u>115 of 115</u>	<u>Mean = 100</u>
General Knowledge		
Lit and Fine Arts	30 of 35	85.71
Mathematics	25 of 25	100.00
Science	29 of 30	96.97
Social Studies	27 of 30	90.00
Test Area Total	<u>111 of 120</u>	<u>Mean = 93.17</u>
Professional Knowledge		
Section 1	34 of 35	97.14
Section 2	33 of 34	97.04
Section 3	33 of 35	94.28
Test Area Total	<u>100 of 104</u>	<u>Mean = 96.16</u>
TEST TOTALS	326 of 339	Unweighted Mean = 96.44



#### 4. Analysis of Content Review

Content review addressed the match between teacher education programs and test content. Reviewers responded by "yes" or "no" or an alternative "do not know." The data represented the views of eight different teacher education programs but was analyzed as a single collective input.

Items Classified: Similar to job relevance, if half or more panelists did not judge an item, that item had to be called "not classified" and therefore not included in the analysis. Table 5-7 shows that all items on the Core Battery were "classified" by the content review panel.

Table 5-7

Number of Items Analyzed and Number Classified  
With Regard to Content Appropriateness: Released Test Edition

<u>Test</u>	<u>Number Analyzed</u>	<u>Number Classified</u>	<u>Not Classified*</u>
Communication Skills			
Essay	N/A	N/A	N/A
Listening	40	40	0
Reading	30	30	0
Writing-MC	45	45	0
General Knowledge			
Lit & Fine Arts	35	35	0
Mathematics	25	25	0
Science	30	30	0
Social Studies	30	30	0
Professional Knowledge			
Section 1	35	35	0
Section 2	34	34	0
Section 3	<u>35</u>	<u>35</u>	<u>0</u>
TOTALS	339	339	0

\*Evaluated by less than 16 panelists (one-half of total)



Content Appropriateness of Test Items: Content reviewers marking "yes" to the match between an item's content and what a teacher education program offers were judging an item as content appropriate. If 50% or more of panelists marked "no," the item was judged not appropriate. The results of content appropriateness judgments are detailed in table 5-8. There exists a very close match between Montana teacher education program content and the content tested by the Core Battery. Literature and fine arts was the only subtest containing non-relevant items but by an insufficient percentage to jeopardize the test's credibility.

Table 5-8

Number of Items Regarded as  
Content Appropriate and Percent Judged Content  
Appropriate by Total Panel: Released Test Edition

<u>Test</u>	<u>Number of Items Appropriate</u>	<u>Number of Items Not Appropriate</u>	<u>Percent Appropriate</u>
Communication Skills			
Essay	N/A	N/A	N/A
Listening	40	0	100
Reading	30	0	100
Writing-MC	45	0	100
General Knowledge			
Lit & Fine Arts	29	6	82.86
Mathematics	25	0	100
Science	30	0	100
Social Studies	30	0	100
Professional Knowledge			
Section 1	35	0	100
Section 2	34	0	100
Section 3	35	0	100
TEST TOTALS	333	6	Unweighted Mean = 98.29



Essay Appropriateness: Using holistic judgments, content reviewers were asked to give a yes/no response to the question, "Do you believe those individuals graduating from a teacher education program would have had the opportunity to learn the writing skills necessary for writing on this topic?" As shown in Table 5-9, 87.5% said students would have had the opportunity. Panelists were instructed to judge a writing skill as "offered by the institution" if that skill was an assumed competency for accepting a student into teacher education, even though the skill may not be taught within a required course.

Table 5-9

ESSAY: Percent of Content Reviewers  
Judging Content Appropriateness for Essay Skills

Question: Do you believe those individuals graduating from a teacher education program would have had the opportunity to learn the writing skills necessary for writing on the topic?

		<u>Number</u>	<u>Percentage</u>
Response:	Yes	28	87.50
	No	2	6.25
No Response:		<u>2</u>	<u>6.25</u>
	TOTAL	32	100.00

Difference in Relative Emphasis: This discussion can be followed by referring to Table 5-10. No state or single teacher education program could be expected to perfectly match the content of the Core Battery's three test areas. Montana



college and university panelists were asked to assess the Core Battery emphases against the emphases in their institutions.

For example, the listening subtest has four defined skills. Listening I measures the basic comprehension of message, including paraphrasing message, understanding connotations of words and summarizing the major idea. Approximately 37% of the listening test is devoted to this skill (Appendix M). Each content review panelist was asked to record the judgment, "Compared to our institutional program, the emphasis stated for NTE is less, the same as, more, or do not know." (Appendix N).

The responses were treated without reference to the institution being compared, thereby creating a state average of teacher education programs. An index of difference in relative emphasis, or DRE, was computed by the following formula:

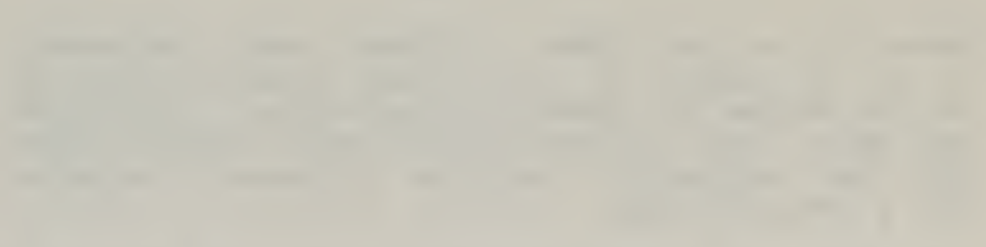
$$DRE = \frac{N_m - N_l}{N_m + N_l + N_s}$$

Where  $N_m$  is the number of "more than" responses,  $N_l$  is the number of "less than" responses and  $N_s$  is the number of "same as" responses. A positive DRE meant that the NTE placed more emphasis than did the collective Montana programs; negative DRE's implied less.

The range of values possible from the formula is from 0.00 (meaning complete agreement) to  $\pm 1.00$  (meaning complete disagreement).

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Table 5-10

Index of Difference in Relative Emphasis in  
the Tests and in the Curriculum

<u>Test Area</u>	<u>Test</u>	<u>Content Description Category</u>	<u>DRE</u>	<u>DRE for Subtest</u>
Communication Skills	Listening	I	.259	15.355
		II	.111	
		III	.074	
		IV	.074	
	Reading	I	.133	12.805
		II	-.133	
		III	-.100	
	Writing-MC	I	-.094	9.400
		II	-.094	
General Knowledge	Literature & Fine Arts	I	.087	20.994
		II	-.241	
		III	-.321	
	Mathematics	I	-.125	13.412
		II	-.188	
		III	-.125	
		IV	.065	
		V	.290	
		VI	.320	
	Science	I	-.080	12.573
		II	-.120	
		III	.120	
		IV	.000	
		V	.111	
		VI	.222	
		VII	-.222	
		VIII	.192	
		IX	-.077	
	Social Studies	I	-.033	14.850
		II	.161	
		III	.133	
		IV	-.267	
Professional Knowledge	Professional Knowledge	I	-.387	16.020
		II	.032	
		III	.194	
		IV	.161	
		V	.067	
		VI	-.032	



The absolute value of the DRE's for each skill was multiplied by its respective test percentage, then summed to obtain a DRE for the subtest. Example:

$$\text{Listening I} \quad .259 \times 37 = 9.583$$

$$\text{II} \quad .111 \times 30 = 3.330$$

$$\text{III} \quad .074 \times 18 = 1.332$$

$$\text{IV} \quad .074 \times 15 = \underline{1.110}$$

$$\text{DRE for listening} = 15.355$$

The range of subtest DRE scores range from 0.00 (perfect agreement) to 100 (perfect disagreement without regard to direction). Literature and fine arts was the subtest possessing the most disagreement within the NTE Core Battery.

Carrying the DRE concept still further, a DRE for each of the three test areas can be calculated, the result to be placed in its relative position within a range of possible scores for comparison. The process involves weighting each subtest as per ETS specifications and then adding the products. Thus, for the test of general knowledge:

Literature & Fine Arts	20.994 x 1.000	=	20.9940
Mathematics	13.412 x 1.2234	=	16.4203
Science	12.573 x 1.1666	=	14.6677
Social Sciences	14.850 x 1.1688	=	<u>17.3567</u>

$$\text{TOTAL} \quad 69.4387$$

Total DRE's for general knowledge can range from 0.00 (perfect agreement with NTE emphasis) to 454 (perfect disagreement). Thus the DRE of 69 can be placed as a percentage within the 0 to 454 continuum for interpretation. Agreement is quite good in this case. Table 5-11 shows the relative position for the three test area DRE's.



Table 5-11

## DRE by Test Area after Weighting

<u>Test Area</u>	<u>Complete Agreement</u>		<u>Complete Disagreement</u>	<u>Montana DRE (rounded)</u>	<u>DRE as Percent</u>
Communication Skills (not including essay)	0	to	884	106	12
General Knowledge	0	to	454	69	15
Professional Knowledge	0	to	100	16	16

Topics Identified as Omitted: All panelists, both content review and job relevance, were asked to identify topics they felt were omitted on the test. These topics were deemed relevant for the job of a beginning Montana teacher and/or included in the teacher preparation program(s). Table 5-12 lists those omitted topics as worded by the respondents and the percentage of the 62 panelists noting the deficiency. Given the problem on Literature and Fine Arts previously found, the number of topics under that subtest is not surprising.

Table 5-12

Topics in Curriculum Identified by  
Panel Members as Not Included in the  
Test Description

<u>Test</u>	<u>Topic</u>	<u>Percent of 62 Panelists Listing Topic</u>
Literature and Fine Arts	Music	3.22
	Literature and experience of Native Americans	1.61
	Artists	1.61
	Art Theory, including color, line and form	3.22
	Appreciation of visual and performing arts, including history, aesthetics and creativity	3.22
	Movement and dance	1.61



Table 5-12 (continued)

<u>Test</u>	<u>Topic</u>	<u>Percent of Panelists Listing Topic</u>
Mathematics	Three dimensional visualization	1.66
Professional Knowledge	Pedagogical competence and teaching skills	4.84

To aid the reader in a quick examination of content review results, Table 5-13 summarizes some of the procedure's primary findings.

Table 5-13

## Summary of Content Review Results

<u>Test</u>	<u>Percentage of Questions Judged Content Appropriate</u>	<u>Index of Difference in Relative Emphasis (Scale : 0 to 100)</u>	<u>Number of Omitted Topics Mentioned by More Than One Panelist</u>
Communication Skills			
Listening	100	15.355	
Reading	100	12.805	
Writing-MC	100	9.400	
General Knowledge			
Lit and Fine arts	82.86	20.994	3
Mathematics	100	13.412	
Science	100	12.573	
Social Studies	100	14.850	
Professional Knowledge			
Section 1	100	16.020	1
Section 2	100	16.020	1
Section 3	100	16.020	1



## 5. Analysis of Knowledge Estimation

Knowledge estimation is the process by which the performance expected of minimally qualified candidates is estimated. After several adjustment steps, a figure known as a study score is derived. The Montana State Board of Public Education has the responsibility for examining the study score, modifying or altering it as they see fit, and arriving at an adopted minimum qualifying score on each of the Core Battery's three areas.

To briefly review the process: Knowledge estimation panelists were asked to arrive at a figure representing the percent of minimally qualified candidates who would know the correct answer to each test item. Guessing was not to be taken into account. Panelists' responses were recorded on standard forms (Appendix L).

### Compilation of Knowledge Estimation Data

Raw data from panelists' response sheets were put into frequency distributions for each subtest. The following format was used for all subtests except essay:

Test Area											Subtest	
Item	10	20	30	40	50	60	60	70	80	90	Mean	S.D.
1											1	1
2											2	2
3											3	3
.											.	.
.											.	.
n											n	n
Total N											Mean	Mean
Mean											Percentage	S.D.
S.D.												

See Appendix O for information on computer program tracing.



An item could not be used in analysis unless over 50% of the panelists actually made judgments on it. Except for a few inadvertently omitted responses or possible computer input errors, the "do not know" (DNK) response would be the best indicator of non-response to knowledge estimation. As seen in Table 5-14, the DNK totals were insignificant for any subtest or for the total test (.006%).

Table 5-14

Number of DNK Responses by Subtest

<u>Subtest</u>	<u>No. of Items</u>	<u>Responses Possible</u>	<u>DNK Count</u>
Essay	14 per person	868	0
Listening	40	2,480	1
Reading	30	1,860	3
Writing-MC	45	2,790	2
Lit & Fine Arts	35	2,170	26
Mathematics	25	1,550	7
Science	30	1,860	15
Social Studies	30	1,860	22
Professional Ed 1	35	2,170	9
Professional Ed 2	34	2,108	18
Professional Ed 3	35	2,170	27
Totals	399 + essay	21,886	130

The highest DNK of a single item was four, an item on the social studies subtest. Since each item had a possibility of 62 responses, no individual items were discarded for lack of sufficient response.

Mean Raw Percentage: Each item had a mean, or average estimated percentage as gauged by all 62 panelists. These item means were then averaged to arrive at a mean raw percentage for each subtest. Essay procedures were different and are described elsewhere in this report. It should be emphasized that these mean raw percentages were crude scores only, and had to be adjusted, weighted and transformed to be usable. Mean



raw percentages are found in the appropriate column in Table 5-15.

Mean Raw Scores: Raw score percentages were modified to account for (a) guessing by candidates who do not actually know the answer, (b) non-relevant and non-content appropriate items, the correct answer assumed to be not known by Montana candidates, (c) guessing by candidates on non-relevant and non-content appropriate items, and (d) transformation from percentages to raw scores relative to the number of items per subtest. The mean raw scores represent the number of items on a subtest that minimally qualified candidates would be expected to correctly mark on answer sheets, a figure different from the percent who would know the answers.

The details of the modifying process are exhibited as Appendix P. Table 5-15 summarizes the mean raw percentages found by the knowledge estimation panel and the mean raw scores for each subtest. Comparing the last two columns in the table gives an estimate of the raw scores expected of Montana's minimally qualified population.

Table 5-15

Mean Raw Percentages Modified to Mean Raw Scores

<u>Subtest</u>	<u>Mean Raw Percentage</u>	<u>Number of Items Listed</u>	<u>Mean Raw Scores</u>
Essay	N/A	N/A	N/A
Listening	54.70	40	26.41
Reading	50.30	30	18.07
Writing-MC	44.94	45	25.18
Literature and Fine Arts	43.12	35	15.97
Mathematics	50.57	25	15.11
Science	47.45	30	17.01
Social Studies	47.15	30	15.86
Professional Ed 1	49.41	35	20.44
Professional Ed 2	47.45	34	19.33
Professional Ed 3	47.52	35	19.74



Essay Knowledge Estimation: Each panelist judged 14 sample essays, the set containing essays of various quality drawn from a pool of 70 samples. (Appendix L) Again keeping the minimally qualified candidate in mind, the judgment was whether each essay would be of "pass" or "fail" quality. The number of panelists deciding either way is shown on Table 5-16. The essay samples had been classified on a scale of 12 (best) to 2 (poorest) by ETS, but these ratings were not known by the panelists. The ratings supplied by ETS appear as Table 5-17.

The combination of essay judgments with the quality designations allows the pass-fail breaking point to be visualized as seen in Table 5-18. Inspection of that table shows quality designation 5 to be the level at which the majority of Montana estimators feel passing quality is attained.

Table 5-16

Essay Judgment: Number of Panelists Judging Sample Essays  
According to Qualified or Unqualified

Essay Sample Code	Minimally Qualified or Better/Pass	Unqualified/ Fail	Essay Sample Code	Minimally Qualified or Better/Pass	Unqualified Fail
A	12	0	T	10	1
B	11	1	U	9	3
C	9	4	V	10	1
D	12	0	W	11	1
E	12	0	X	4	8
F	4	8	Y	12	0
G	9	3	Z	12	3
H	12	0	AA	11	0
I	9	5	BB	6	8
J	5	7	CC	7	4
K	12	0	DD	15	0
L	12	1	EE	10	1
M	11	1	FF	9	2
N	9	3	GG	9	3
O	15	0	HH	7	5
P	3	8	II	10	1
Q	7	4	JJ	15	0
R	12	0	KK	12	1
S	14	1	LL	4	7



Table 5-16 (continued)

Essay Sample Code	Minimally Qualified or Better/Pass	Unqualified/ Fail	Essay Sample Code	Minimally Qualified or Better/Pass	Unqualified/ Fail
MM	7	5	CCC	5	7
NN	11	4	DDD	2	12
OO	10	2	EEE	0	14
PP	11	2	FFF	0	12
QQ	6	3	GGG	1	10
RR	9	7	HHH	6	6
SS	6	5	III	6	6
TT	1	11	JJJ	6	5
UU	12	3	KKK	2	9
VV	12	0	LLL	10	0
WW	5	6	MMM	3	8
XX	6	6	NNN	8	3
YY	14	0	OOO	5	5
ZZ	6	6	PPP	13	2
AAA	1	11	QQQ	10	0
BBB	5	6	RRR	8	2

Maximum judgments per essay item = 14. Actual panelists participating was 10 less than planned. Therefore, number of judgments varied according to the sample essay codes distributed in packets of no-show panelists.

Table 5-17

## NTE Core Battery 3ENT Sample Essay Designations

Code	Quality	Code	Quality	Code	Quality
A	8	AA	6	AAA	2
B	11	BB	4	BBB	5
C	6	CC	3	CCC	2
D	12	DD	6	DDD	3
E	8	EE	6	EEE	2
F	4	FF	5	FFF	2
G	7	GG	6	GGG	2
H	9	HH	5	HHH	5
I	8	II	10	III	5
J	8	JJ	7	JJJ	5
K	10	KK	11	KKK	5
L	8	LL	4	LLL	11
M	7	MM	4	MMM	3
N	6	NN	5	NNN	11
O	6	OO	7	OOO	3
P	6	PP	10	PPP	12
Q	4	QQ	4	QQQ	12
R	9	RR	7	RRR	12
S	9	SS	5		
T	9	TT	4		
U	6	UU	4		
V	6	VV	12		
W	9	WW	4		
X	3	XX	5		
Y	10	YY	11		
Z	10	ZZ	4		



Table 5-18

Number of Essays Judged Minimally Qualified (Pass)  
or Unqualified (Fail) Relative to Essay Quality

<u>Essay Quality Level</u>	<u>Number of Sample Essays</u>	<u>Number of Essays Judged Passing</u>	<u>Number of Essays Judged Failing</u>
12 (highest)	5	5	0
11	5	5	0
10	5	5	0
9	5	5	0
8	5	4	1
7	5	5	0
6	10	9	1
5	10	5	3 Tied=2
4	10	4	5 Tied=1
3	5	1	3 Tied=1
2 (lowest)	5	0	5

It was necessary that a minimal essay quality be determined for Montana candidates because the numerical value of the level is used to convert essay scores (2 through 12) to a raw score component of the total Communications Skills test. The advisory forum debated the issue and established the minimal Montana essay quality at five (5), that point where the passing/failing majority switched to passing. Candidates may score less or more than 5 on actual essays written, but the Communications Skills study score is based on that figure.

Adjusted Mean Raw Score: All parts of the NTE Core Battery do not carry equal weight. Using ETS guidelines designed specifically for the various subtests, mean raw scores are multiplied by established weighting factors. The adjusted mean raw scores thus derived are then summed to arrive at an adjusted score for each of the three test areas. Table 5-19 is designed to show the results of the adjustment process.



Table 5-19

## Adjusted Mean Raw Scores for Montana Core Battery

	<u>Mean</u> <u>Raw Scores</u>	<u>Weighting</u> <u>Factor</u>	<u>Adjusted Mean</u> <u>Raw Scores</u>
$\times =$			
Communication Skills			
Essay	5.00	3.8581	19.2905
Listening	26.41	2.3624	62.3909
Reading	18.07	2.6313	47.5447
Writing-MC	25.18	1.0000	25.1800
TEST TOTAL			<u>154.4061</u>
General Knowledge			
Lit & Fine Arts	15.97	1.0000	15.9700
Mathematics	15.11	1.2243	18.4991
Science	17.01	1.1666	19.8348
Social Science	15.83	1.1688	18.5021
TEST TOTAL			<u>72.8150</u>
Professional Knowledge			
Section I	20.44	1.0000	20.4400
Section II	19.33	1.0000	19.3300
Section III	19.47	1.0000	19.7400
TEST TOTAL			<u>59.5100</u>

Conversion to Scaled Scores: Candidate's results on the Core Battery are reported as "scaled scores" which range from 600 to 699. Three such scaled scores are given, one each for communication skills, general knowledge and professional knowledge. Rounded adjusted mean raw scores from the Montana study were converted to equivalent scaled scores by using published conversion tables available from ETS. This final score is the Montana study score. The three Montana study scores, which form the basis for qualifying score interpretation, are shown as Table 5-20.



Table 5-20

## Montana Scaled Score Equivalents: NTE Core Battery

<u>Test Area</u>	Adjusted Mean <u>Raw Score</u> (rounded)	Scaled Score <u>Equivalent</u> (Range=600-699)
Communication Skills	154	652
General Knowledge	73	648
Professional Knowledge	60	652



## CHAPTER VI

## Interpretation of Study Results

Interpretation seeks to answer three questions: Is the Core Battery content relevant to the job of a beginning Montana teacher? Does the test content appropriately match the teacher education coverage offered in Montana's colleges and universities? What minimum test performance can be anticipated for Montana certificate candidates upon which to base qualifying scores? Previous chapters have supplied the methodology and analysis of results that provide an empirical foundation for decisions.

First, however, the data generated are assumed to arise from panel participants consistent with those planned in the research design. Was this the case? Table 4-1 showed the number of panelists planned, chosen by random selection and finally the actual numbers participating. Chi-square analysis of these comparisons yields Table 6-1, which was based on the number of expected vs actual participants.

Table 6-1  
Chi-Square Analysis of Job Relevance Panelists\*

<u>Category</u>	<u>Significant Difference Planned vs Chosen</u>	<u>Significant Difference Chosen vs Participation</u>
Ethnicity	No	No
Gender	No	No
Certification Level	No	No
Staff Function	No	No
School Size	No	No
Total Panel Sizes	No	No

Job Relevance  
Content Review  
Knowledge Estimation

\*Significance level = .05



The lack of statistical significance in any category indicates that raw test data was generated by numbers of professionals not differing from proportions planned in the design.

A similar analysis of the content review panelists, using the same six categories, comparing chosen vs actual participation, revealed no significant difference.

### 1. Job Relevance Interpretation

Job relevance gauges the degree to which test item content is relevant to the job of a beginning Montana teacher. By test section, relevance decisions are positive and not in need of second stage examination if 90% or more of the items are judged "relevant."

A re-examination of Table 5-3 and 5-5 reveals that all three Core Battery test areas exceed the 90% level. However, the subtest of Literature and Fine Arts (85.71%) did individually fall below the criterion and therefore was subject to a second stage examination.

Literature and Fine Arts Correspondence: Decisions about a test with lower relevance can still be meaningful depending whether irrelevancy is distributed somewhat evenly among the concepts tested or if concentrated on a single one(s). This determination was accomplished by chi-square analysis, the specifics of which are reproduced as Table 6-2.



Table 6-2

Chi-Square Analysis for Test of Literature and Fine Arts:  
Job Relevance

Literature and Fine Arts content description (concept)	I	II	III
Number of Items per content description ( $F_e$ )	10	19	6
Number of Relevant Items per content description ( $F_o$ )	8	17	5

Chi-Square = .776 where critical Chi-Square = 5.991 at .05

The interpretation of no statistical difference means that the five irrelevant items on the subtest are balanced among the three concepts tested, maintaining overall relevancy.

As a matter of interest, Chi-Square was also effected on the remaining eight non-relevant items respective to the corresponding subtests and their content descriptions. No test or concept topic was found to be a target of irrelevancy.

Summary of Job Relevance by Test: Using ETS definitions, the findings of job relevancy for the tests were as follows:

1. Communication Skills - very relevant.
  - a. Essay - very relevant. 93.33% of panelists feel the essay skills are relevant to writing skills needed to teach in Montana.
  - b. Listening - very relevant. Panelists judged 100% of items relevant.
  - c. Reading - very relevant. Panelists judged 100% of items relevant.
  - d. Writing, Multiple Choice - very relevant. Panelists judged 100% of items relevant.



2. General Knowledge - very relevant.

a. Literature and Fine Arts - relevant.  
Panelists judged 85.71% of items relevant.  
A second stage of interpretation showed  
irrelevant items to be evenly distributed.

b. Mathematics - very relevant.  
Panelists judged 100% of items relevant.

c. Science - very relevant. Panelists  
judged 96.67% of items relevant.

d. Social Studies - very relevant.  
Panelists judged 90% of items relevant.

3. Professional Knowledge - very relevant.  
Panelists judged 96.16% of items relevant. All  
three subtests are grouped because the six  
concept topics appear in each.

All three of the NTE Core Battery tests are very  
relevant to the job of a beginning teacher in Montana.

2. Content Review Interpretation

Interpretation of content review analysis leads to  
conclusions about the correspondence between test content and  
teacher education program content. No two campus programs will  
be exactly alike and the aggregate across the eight Montana  
curricula was the basis for interpretation.

Referring to Tables 5-8 and 5-9, it is noted that nine  
of the Core Battery subtests had 100% of items judged content  
appropriate. The exceptions, Essay and Literature and Fine  
Arts, were subjected to second stage analysis.

Essay Analysis: Two of the 32 content reviewers gave no  
response to the essay question, "Do you believe those  
individuals graduating from a teacher education program would  
have had the opportunity to learn the writing skills necessary



for writing on the topic?" Of the 30 who did respond, 28 said "yes" and two said "no." The percentages of yes responses was 93.33%. Being in excess of 90%, the essay can be called content appropriate.

Literature and Fine Arts Correspondence: Four concepts, called content descriptors, are found on the subtest of Literature and Fine Arts. Chi-Square analysis looks at the number of items in each of these four concepts, compares that quantity to the number of items judged content appropriate, and gauges whether the non-appropriate items are clustered on a single concept(s) or are divided evenly among them. The analysis is reproduced as Table 6-3.

Table 6-3

Chi-Square Analysis of Literature and Fine Arts:  
Content Review

Content Description (Concepts)	I	II	III
Number of Items per Content Description	10	19	6
Number of Items Judged Content Appropriate	6	17	6

Chi-Square = 1.81 where critical Chi-Square = 5.991 at .05

Since no statistical difference exists, the subtest in question is not using a concept(s) which is isolated as non-appropriate; in other words, is not testing material which is not covered by Montana teacher education programs.

Interpretation of Difference in Relative Emphasis:  
College panelists were asked to judge whether the test placed less, equal or more emphasis on topics than did the college



curricula. The index of difference in relative emphasis (DRE) was calculated to show the variability of differences on a scale ranging from zero (no difference) to 100 (maximum difference). Any DRE less than 50 would indicate the test content and college curricula to be more alike than different. A more precise upper boundary of 40, as was used in New York, permits more confident conclusions.

A review of Table 5-10 shows DRE's for the Montana Study subtest to range from 9.400 to 20.994. Given the nine items determined irrelevant or not content appropriate, it is not surprising that Literature and Fine Arts had the highest DRE. After weighting (Table 5-11) the DRE for each of the three Core Battery subtests is well below the 40 criterion level. It may be concluded that the Montana teacher education curricula, in the aggregate, closely parallel the content that is measured by the tests of communication skills, general knowledge and professional knowledge.

Omitted Test Topics: Eight topics were identified as omitted from the Core Battery, one topic mentioned by 4.84% of the panelists. However, it should be remembered that solicitation of topic omissions was sought from all panelists, not just content reviewers. The maximum number of panelists mentioning the same topic was three, a figure very small when contrasted to 62 possible frequencies.

Summary of Content Appropriateness for NTE Core Battery: Candidates must meet qualifying scores on all three Core Battery tests and fairness would dictate that college programs



would expose them to required content. How well that exposure corresponds to test content is evaluated by the following test/subtest statements:

1. Communication skills - very closely related.

a. Essay - very closely related with 93.33% of panelists responding indicating students would have sufficient exposure to necessary skills.

b. Listening - very closely related. All test items were appropriate. DRE of 15.355 would seem to support some professors' comments that listening per se was not taught at college but such skills would be expected from prior educational background.

c. Reading - very closely related. All test items appropriate. Acceptable DRE value.

d. Writing, Multiple Choice - very closely related. All test items appropriate and DRE the lowest for any subtest.

2. General Knowledge - very closely related. Only the test of Literature and Fine Arts fell below the 90% appropriateness level. An absence of non-appropriate items otherwise existed.

a. Literature and Fine Arts - closely related. This was the only subtest with non-appropriate items. Chi-Square analysis showed no one topic to be the target for inappropriate items. DRE was the highest (20.994) but below questionable levels. Some Montana colleges have a "cafeteria" selection of humanities courses which may account for this subtests' weaker performance. Six omitted topics.

b. Mathematics - very closely related. All test items appropriate. Acceptable DRE. One topic omitted.

c. Science - very closely related. All test items appropriate. Acceptable DRE. No topics omitted.



d. Social Studies - very closely related. All test items appropriate with acceptable DRE levels.

3. Professional Knowledge - very closely related. All topics appear on all three subsections and a single evaluation statement is proper. All items content appropriate with an acceptable DRE level. Three topics listed as omitted.

The overall correspondence of NTE Core Battery content with the Montana program average appears to be very high. DRE indices are between 12 and 16 on all three areas, well below criterion levels. Differences certainly exist among the eight colleges' general education requirements, but that variance seems to have minimal consequences. If there is a message in the content review, it might be that some institutions may want to internally examine the feasibility of narrower structured core options in the area of general requirements.

### 3. Knowledge Estimation Interpretation

Comparative Study Scores: Information is available from ETS listing the study and/or qualifying scores from 12 states using the NTE Core Battery for certification purposes. Not all states used the entire Core Battery, nor have all states adopted qualifying scores as yet. A copy of the ETS document appears as Appendix Q. Using scaled study scores as a ranking procedure, Montana exhibits the relative placement shown in Table 6-4.



Table 6-4

Montana Scaled Study Scores Relative to Selected States  
That Use NTE Core Battery for Certification

<u>Communication Skills</u>	<u>General Knowledge</u>	<u>Professional Knowledge</u>
663 Kentucky	658 Kentucky	661 Kentucky
662 Tennessee	658 Tennessee	655 Tennessee
661 Maryland	657 New Mexico	652 MONTANA
659 Indiana	656 New Jersey	652 New York
658 New Jersey	656 New York	652 Louisiana
*656 New Mexico	*655 Indiana	*650 Mississippi
656 New York	655 Maryland	644 Maryland
652 MONTANA	651 Louisiana	644 North Carolina
652 Louisiana	648 MONTANA	642 New Mexico
652 Mississippi	647 Mississippi	641 Virginia
651 Virginia	641 Virginia	640 Indiana

\*The median, or middle, score separating the upper half number of states from the lower half number.

The Standard Error of Measurement: Standard error of measurements ( $SE_{meas}$ ) for each of the three test areas are available from ETS and are expressed in scaled score units.

The  $SE_{meas}$  for each is as follows:

Communication Skills	3.5
General Knowledge	3.5
Professional Knowledge	3.8

Qualifying scores have great impact on two groups of candidates. The first is, of course, those who score well below the adopted minimum. The second is those whose scores cluster at or near the qualifying score. Since an individual's score can vary from his/her true score on any given test administration, certification could be denied or granted to persons in this second group depending on their score variability occurring on the day they took the test. The quandary for agencies setting qualifying scores asks, "How many otherwise qualified candidates might be denied certification because they scored low on a given day?" and "How many otherwise unqualified candidates might be granted certification



because they scored better than normal on a given day?"

Fortunately, the  $SE_{meas}$  is based on normal probability and thus allows an estimation of the proportion from the minimally qualified group who might be rejected or accepted. Table 6-5 utilizes selected  $SE_{meas}$  multiples by which to view the rejection/acceptance tradeoff. In the Table, X stands for any specified score and k stands for the multiple of the  $SE_{meas}$  of the score.

Table 6-5

Probabilities of Erroneously Rejected Applicants with True Scores Greater Than or Equal to X and Accepting Applicants With True Scores Less Than X when Standard for Acceptance is Observed Score Greater Than or Equal to  $X - k(SE_{meas})$

Probability of Rejecting Applicant Whose True Score is the Specified Distance, in $SE_{meas}$ Units, above X							Probability of Accepting Applicant Whose True Score is the Specified Distance, in $SE_{meas}$ Units, below X					
k	0.0	0.5	1.0	1.5	2.0	2.5	0.0	0.5	1.0	1.5	2.0	2.5
0.0	.50	.31	.16	.07	.02	.01	.50	.31	.16	.07	.02	.01
0.5	.31	.16	.07	.02	.01	.001	.69	.50	.31	.16	.07	.02
1.0	.16	.07	.02	.01	.001	.001	.84	.69	.50	.31	.16	.07
1.5	.07	.02	.01	.001	.001	.001	.93	.84	.69	.50	.31	.16
2.0	.02	.01	.001	.001	.001	.001	.98	.93	.84	.69	.50	.31
2.5	.01	.001	.001	.001	.001	.001	.99	.98	.93	.84	.69	.50

Scaled Scores Converted to Percentiles: The analysis and interpretation of data thus far has been concerned with estimated Montana scores. The discussion now switches to the actual impact of selected study and adopted qualifying scores on the population of candidates who have actually taken the tests. This impact is assessed by comparing various scaled scores to their equivalent percentiles. Any given percentile



represents the percent of test takers who scored below the selected scaled score, or in other words, the percent of non-qualifying candidates. Made available by ETS, Table 6-6 gives a range of scaled scores and percentile equivalents. It is important to remember that the percentiles in the table are based on actual performance of test takers and does not reflect a carefully selected national sample. If it can be assumed that Montana candidates will obtain scores similar to the demonstrated actual performance scores, the percentiles in Table 6-6 provide a more concrete prediction.

Table 6-6

Selected Scaled Scores and Percentile Equivalents for  
Released Edition NTE Core Battery

<u>Communication Skills</u>		<u>General Knowledge</u>		<u>Professional Knowledge</u>	
Scaled Score	Percentile	Scale Score	Percentile	Scaled Score	Percentile
646	16	642	16	645	18
647	18	643	18	646	20
648	19	644	19	647	22
649	21	645	21	648	24
650	23	646	23	649	26
651	25	647	25	650	29
*652	27	*648	27	651	31
653	29	649	30	*652	34
645	31	650	31	653	36
655	34	651	34	654	39
656	36	652	36	655	42
657	39	653	39	656	45
658	41	654	41	657	48
659	44	655	44	658	50
660	47	656	46	659	53
				660	56

\* Montana Study Scores

Comparative Adopted Qualifying Scores: The basis for comparing qualifying scores adopted by other states is found in Appendix Q.



Qualifying score information is available for ten states with study plus qualifying score comparisons available for nine states. Not all states use the entire Core Battery, but all states noted are using the test for certification purposes. With one exception in professional knowledge, all states have adopted a lower qualifying score than the state study score. Literature reading and conversations with some other states reveal that the decreases from study scores was usually based on several of the following reasons:

- a. Application of the  $SE_{meas}$  principle to study scores.
- b. A desire to give the benefit of doubt to candidates who score near the study qualifying level.
- c. A desire to keep the pool of minority certificate candidates higher, based on the fact that minorities score lower than do anglo candidates.
- d. Taking a conservative stance because of (1) the unknown performance of the states' candidates, or (2) the intention to start low and increase qualifying scores in succeeding years.
- e. An attempt to minimize potential litigation, assuming such lawsuits would be instigated by candidates scoring below the study score.
- f. Possible impact on the certification process and on teacher education programs.
- g. Possible impact on teacher supply and demand.
- h. Taking into account the limitations of testing itself and the limitations of the Core Battery as applied to a state's peculiar situation.
- i. Other political reasons.



Table 6-7 has been prepared to show the difference between study and adopted qualifying scores. The differences range from zero to 24 scaled score points. Readers are again referred to Table 6-6 to examine the percentile equivalents of qualifying scores. Some scores are too low to be on the table, although the information could be obtained. There was a tendency to drop all test areas in any one state by the same quantity across all test areas.

Table 6-7

Study Scores (S), Qualifying Scores (Q) and Differences (D)  
for Selected States: NTE Core Battery

<u>State</u>	<u>Communication Skills</u>			<u>General Knowledge</u>			<u>Professional Knowledge</u>		
	<u>S</u>	<u>Q</u>	<u>D</u>	<u>S</u>	<u>Q</u>	<u>D</u>	<u>S</u>	<u>Q</u>	<u>D</u>
Kentucky	663	643	20	658	637	21	661	641	20
Louisiana	652	645	7	651	644	7	652	645	7
Mississippi	652	641	9	647	636	9	650	639	11
New Jersey				656	642	14			
New Mexico	656	644	12	657	645	12	642	630	12
New York	656	650	6	656	649	7	652	646	6
N. Carolina							644	644	0
Tennessee	622	640	22	658	637	21	655	631	24
Virginia	651	649	2	641	639	2	641	631	2

#### 4. Proposed Qualifying Scores and Specific Ramifications:

Ranges of Qualifying Scores: Interpretation information presented thus far allows for a relative examination of Montana's three study scores (Communication Skills = 652, General Knowledge = 648, and Professional Knowledge = 652). Scales have been provided whereby the possible consequences of adopted qualifying scores could be judged relative to known



Core Battery performance. Also, any considered qualifying scores could be ranked relative to those adopted in selected states. A range of possibilities has thus been exhibited so that the State Board can view Montana from that perspective.

Proposed Qualifying Scores: The interpretation phase of the study now narrows to single proposed adoption scores, one for each test area, with the intention of showing the specific ramifications of these discrete points. Proposed adoption scores arose from the deliberations of the advisory forum. That body discussed adoption scores primarily with educational reasoning in mind. It was realized, however, that political considerations may have been woven directly into the fabric of opinions.

The  $SE_{meas}$  of the three tests were 3.5, 3.5, and 3.8 scaled score points respective to communication skills, general knowledge and professional knowledge. It is proposed that study scores be reduced by a quantity equal to the rounded up  $SE_{meas}$ . Qualifying scores would then be four scaled score points lower than study scores. Using selected parts of several previously given tables, the proposed scores of 648, 644, and 648 have the relationships shown in Table 6-8.



Table 6-8

Interpretation of Proposed Qualifying Scores Used for  
Certification Purposes: NTE Core Battery

<u>Proposed Qualifying Score</u>	<u>Percentile Equivalent</u>	<u>Placement Within Known Adopted Scores</u>	<u>Crude Percentile Ranking of Montana Compared to Known States</u>
Comm. Skills 648	19	653 Indiana 650 New York 649 Virginia	
(Study Score was 652)	(will fail)	648 MONTANA 645 Louisiana 644 New Mexico 643 Kentucky 641 Mississippi 640 Tennessee	66 percentile
Gen. Knowledge 644	19	649 New York 645 Indiana 645 New Mexico	
(Study Score was 648)	(will fail)	644 MONTANA 644 Louisiana 642 New Jersey 639 Virginia 637 Kentucky 637 Tennessee 636 Mississippi	70 percentile
Prof. Knowledge 648	24	648 MONTANA 646 New York 646 Indiana	
(Study Score was 652)	(will fail)	645 Louisiana 644 N. Carolina 641 Kentucky 639 Virginia 639 Mississippi 631 Tennessee 630 New Mexico	100 percentile



## CHAPTER VII

## Recommendations to the Board of Public Education

The Study, through the advisory forum and the best available judgment, includes the following recommendations for State Board consideration:

1. Minimum qualifying scaled scores necessary to meet the testing mandate be adopted at the following levels:

Communication Skills	-	648
General Knowledge	-	644
Professional Knowledge	-	648

2. The Office of Public Instruction be designated:

(a) the depository for all raw study data, to be used in case of legal challenge, the need for study repetition/tracing and other appropriate research.

(b) the agency responsible for disseminating and interpreting the study and monitoring the impact of adopted scores.

3. Under the assumption that adopted scores will be examined again and possibly reset within a 3-5 year period, procedures should be established to collect and interpret normative data. This would involve a methodology different from the estimation judgments used in the current study.



## APPENDIX SECTION

### Montana Validation Report



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## Montana Summary of Personnel Job Assignment for FY 85

Job Description	American Indian & Alaskan		Asian & Pacific Island		Black Non Hispanic		Hispanic		White Non Hispanic		Male	Female	Total
	M	F	M	F	M	F	M	F	M	F			
Teachers	70	118	10	6	3	8	14	12	6574	7562	6671	7706	14,377
Aides	2	24	0	1	0	0	0	2	42	809	44	836	880
Specialized Personnel	4	18	2	2	0	0	2	1	407	693	415	714	1,129
Administrators	13	13	1	0	0	0	4	0	795	254	813	267	1,080
Total by Sex	89	173	13	9	3	8	20	15	7,818	9,318	7,943	9,523	17,466
Total by Race	262		22		11		35		17,136				
Percent by Race	1.5%		.12%		.06%		.20%		98.1%				
Percent by Sex											45%	55%	

Source: OPI 5/28/85

Personnel may be counted in multiple categories

Montana validation groups teachers plus aides as teachers; Administrators plus specialized as administrators



Teacher Competency Test Pass Rates  
By Ethnicity For Ten States

State	Pass Rates By Ethnic Group						Test
	Anglos	Asians	Blacks	Hispanics	Native Americans	All	
Alabama	86		43			81	AICT(NES)
Arizona 1/6/83	73	50	24	42	22	66	ATPE
7/9/83	70	25	41	36	19	59	
California	76	50	26	38	67	68	CBEST(ETS)
Florida 6/82	92	67	37	57	90	85	FCTE
2/83	90	63	35	51	100	84	Customized
Georgia	87		34			78	CRTCT(NES)
Louisiana	78		15			77	NTE(ETS)
Mississippi* 97-100			54-70			NA	NTE(ETS)
Oklahoma	79	82	45	71	70	78	OCT(NES) Customized
Texas	62	47**	10	19	47**	54	P-PST(ETS)
Virginia* (Trial Testing)							NTE(ETS)
Communication Skills	97%		56%			NA	
General Knowledge	99%		69%			NA	
Prof. Knowledge	99%		83%			NA	

\*Pass rates at predominately white and black public institutions.

\*\*Asian and Native American candidates are reported in a combined "Others" category in the Texas reporting system.

Source: Smith, G. P. (in press). The Impact of Competency Tests on Teacher Education: Ethical and Legal Issues in Selecting and Certifying Teachers. In M. Haberman (Ed.) Research in Teacher Education. Norwood, NJ: ABLEX Publishing Company.



## Montana Validation Study Advisory Forum

August 22, 1985

Dr. Eric Strohmeyer  
Associate Dean of Education  
Montana State University

Dr. Harold Anderson, Head  
Division of Human Services  
College of Great Falls

Dr. Jerry Brown  
Vice President for Academic Affairs  
Northern Montana College

Mr. Arthur Schauer, Member  
State Board of Public Education

Dr. Hidde Van Duym  
Executive Secretary  
State Board of Public Education

Mr. Eric Feaver, President  
Montana Education Association

Ms. Veryl Kosteczko, President  
Montana Federation of Teachers

Mr. Jess Long  
Executive Secretary  
School Administrators of Montana

Mr. Dwight Moose, Principal  
Helena High School

Mr. Wayne Buchanan  
Executive Secretary  
Montana School Boards Association

Dr. John Voorhis  
Certification and Teacher Education  
Office of Public Instruction

Ms. Judy Birch  
Guidance Specialist  
Office of Public Instruction

Dr. Richard Peterson  
Western Field Representative  
Educational Testing Service



## Appendix D

## Organizations and Agencies Solicited for Panel Nominations

Mr. Eric Feaver  
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Ms. Veryl Kosteczko  
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Montana State Federation of Teachers  
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Executive Secretary  
School Administrators of Montana  
Box 5417  
Helena, Montana 59604

Mr. Wayne Buchanan  
Executive Director  
Montana School Boards Association  
501 N. Sanders  
Helena, Montana 59601

Dr. John Kohl  
President MACTE  
Dean of Education  
Montana State University  
Bozeman, Montana 59717

Montana Indian Education Association  
c/o Mr. Bob Parsley  
Office of Public Instruction  
State Capitol  
Helena, Montana 59620



Deans of Education

Dr. Kathleen Miller  
Acting Dean  
School of Education  
University of Montana  
Missoula Montana 59812

Dr. John Kohl  
Dean  
College of Education  
Montana State University  
Bozeman, Montana 59717

Dr. Benedict Surwill  
Dean  
School of Education  
Eastern Montana College  
Billings, Montana 59101

Dr. A. Eloise Snavely  
Director of Teacher Education  
Western Montana College  
Dillon, Montana 59725

Dr. Gus Korb  
Director of Teacher Education  
Northern Montana College  
Havre, Montana 59501

Dr. Harold S. Anderson  
Head  
Division of Human Services  
College of Great Falls  
Great Falls, Montana 59401

Dr. Lynette Mohler  
Chairperson  
Department of Education  
Carroll College  
Helena, Montana 59625

Dr. James Taylor  
Registrar  
Rocky Mountain College  
Billings, Montana 59102



Subject area organizations

Montana Association of Marketing Educators  
c/o Redina Berscheid  
Office of Public Instruction  
State Capitol  
Helena, Montana 59620

Council for Exceptional Children  
c/o Gail Gray  
Office of Public Instruction  
State Capitol  
Helena, Montana 59620

Montana Art Education Association  
c/o Janet Athwal  
Office of Public Instruction  
State Capitol  
Helena, Montana 59620

Montana Association of Bilingual Education  
Sara Lefthand  
President  
Lodge Grass Schools  
Drawer AF  
Lodge Grass, Montana 59050

Montana Association of Gifted & Talented Education  
c/o Nancy Lukenbill  
Office of Public Instruction  
State Capitol  
Helena, Montana 59620

Montana Association of Health, PE, Recreation & Dance  
c/o Spencer Sartorius  
Office of Public Instruction  
State Capitol  
Helena, Montana 59620

Montana Association of Language Teachers  
c/o Duane Jackson  
Office of Public Instruction  
State Capitol  
Helena, Montana 59620

Montana Association of Teachers of English & Language Arts  
c/o Claudette Morton  
Office of Public Instruction  
State Capitol  
Helena, Montana 59620



Montana Business Education Association  
c/o Marion Reed  
Office of Public Instruction  
State Capitol  
Helena, Montana 59620

Montana Council of Administrators of Special Education  
Larry Holmquist  
President  
Gallatin/Madison Co. Spec. Ed. Coop.  
Belgrade, Montana 59714

Montana Council of Teachers of Mathematics  
c/o Dan Dolan  
Office of Public Instruction  
State Capitol  
Helena, Montana 59620

Montana Council of Teachers of Social Studies  
c/o Ed Eschler  
Office of Public Instruction  
State Capitol  
Helena, Montana 59620

Montana Library Association  
c/o Sheila Cates  
Office of Public Instruction  
State Capitol  
Helena, Montana 59620

Montana Industrial Education Association  
c/o Jeff Wulf  
Office of Public Instruction  
State Capitol  
Helena, Montana 59620

Montana Music Educators Association  
c/o Janet Athwal  
Office of Public Instruction  
State Capitol  
Helena, Montana 59620

Montana Association for Counseling & Development  
c/o Judy Birch  
Office of Public Instruction  
State Capitol  
Helena, Montana 59620



Montana Science Teachers Association  
c/o Robert Briggs  
Office of Public Instruction  
State Capitol  
Helena, Montana 59620

Montana State Reading Council  
c/o Mildred Lindell  
Principal  
Plains School  
412 Rittinour  
Plains, Montana 59859

Montana Traffic Education Association  
c/o Curt Hahn  
Office of Public Instruction  
State Capitol  
Helena, Montana 59620

Montana Vocational Agriculture Teachers Association  
c/o Leonard Lombardi  
Office of Public Instruction  
State Capitol  
Helena, Montana 59620



Ms. Donna M. Allen  
 County Superintendent  
 Beaverhead County  
 P. O. Box 351  
 Dillon, Montana 59725 Ms. Allen: Ms. Donna M. Allen

Mrs. Roberta Snively  
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 Drawer H  
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Mr. John Moffat  
 County Superintendent  
 Blaine County  
 Chinook, Montana 59523 Mr. Moffat: Mr. John Moffat

Ms. Jill Menard  
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Ms. Peggy Ann Kotar  
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Ms. Sara Radtka Boone  
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Mr. Howard Farver  
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Daniels County  
 Scobey, Montana 59263Mr. Farver:Mr. Howard Farver

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Mr. Carl Stetzner  
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 County Courthouse  
 Anaconda, Montana 59711Mr. Stetzner:Mr. Carl Stetzner

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 Fallon County  
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Ms. Shirley Barrick  
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 Fergus Co. Courthouse  
 Lewistown, Montana 59457Ms. Barrick:Ms. Shirley Barrick

Mr. Wallace Vinnedge  
 County Superintendent  
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 Garfield County  
 Jordan, Montana 59337Ms. Stafford:Ms. Betty Stafford

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 Glacier County  
 Cut Bank, Montana 59427Mr. Omsberg:Mr. Darryl Omsberg

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 Ryegate, Montana 59074Ms. Carpenter:Ms. Sharon E. Carpenter

Ms. Julia Enman  
 County Superintendent



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 Judith Basin County  
 Stanford, Montana 59479Mrs. Valentine:Mrs. Dorothy Valentine

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Mrs. Jean Ellison  
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 Livingston, Montana 59047Ms. Spannring:Ms. Sonja Spannring

Mr. Robert Coffey  
 County Superintendent  
 Petroleum County  
 Winnett, Montana 59087Mr. Coffey:Mr. Robert Coffey

Ms. Dolores Hughes  
 County Superintendent  
 Phillips County  
 Malta, Montana 59538Ms. Hughes:Ms. Dolores Hughes

Mr. Andy Vandolah  
 County Superintendent  
 Pondera County  
 Conrad, Montana 59425Mr. Vandolah:Mr. Andy Vandolah

Mr. Don Bidwell  
 County Superintendent  
 Powder River County  
 Broadus, Montana 59317Mr. Bidwell:Mr. Don Bidwell

Mr. Robert F. Johnston  
 County Superintendent  
 Powell County  
 409 Missouri  
 Deer Lodge, Montana 59722Mr. Johnston:Mr. Robert F. Johnston



Ms. Alice Pehl  
 County Superintendent  
 Prairie County  
 Terry, Montana 59349 Ms. Pehl: Ms. Alice Pehl

Mr. Greg Danelz  
 County Superintendent  
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 Box 5021, Courthouse  
 Hamilton, Montana 59840 Mr. Danelz: Mr. Greg Danelz

Ms. Joan A. Ritter  
 County Superintendent  
 Richland County  
 Sidney, Montana 59270 Ms. Ritter: Ms. Joan A. Ritter

Mr. Harry L. Axtmann  
 County Superintendent  
 Roosevelt County  
 Wolf Point, Montana 59201 Mr. Axtmann: Mr. Harry L. Axtmann

Mrs. Jean Nolan  
 County Superintendent  
 Rosebud County  
 Forsyth, Montana 59327 Mrs. Nolan: Mrs. Jean Nolan

Ms. Bette Seibel-Volkman  
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 Sanders County  
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Mr. Robert Smith  
 County Superintendent  
 Sheridan County  
 Plentywood, Montana 59254 Mr. Smith: Mr. Robert Smith

Mr. Fred Bull  
 County Superintendent  
 Silver Bow County  
 West Granite  
 Butte, Montana 59701 Mr. Bull: Mr. Fred Bull

Ms. Lois Van Every  
 County Superintendent  
 Stillwater County  
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Mrs. Edith Harper  
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 Big Timber, Montana 59011 Mrs. Harper: Mrs. Edith Harper



Mrs. Wilma Jensen  
County Superintendent  
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Ms. Thelma O. Robertson  
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Shelby, Montana 59474Ms. Robertson:Ms. Thelma O. Robertson

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Mr. Ken Miller  
County Superintendent  
Wheatland County  
Harlowton, Montana 59036Mr. Miller:Mr. Ken Miller

Mrs. Jenny Losinski  
County Superintendent  
Wibaux County  
Wibaux, Montana 59353Mrs. Losinski:Mrs. Jenny Losinski

Mr. Buzz Christianson  
County Superintendent  
Yellowstone County  
Room 203, Courthouse  
Billings, Montana 59101Mr. Christianson:Mr. Buzz Christianson





## Form Letter Soliciting Nominees

## OFFICE OF PUBLIC INSTRUCTION

STATE CAPITOL  
HELENA, MONTANA 59620  
(406) 444-3095

Ed Argenbright  
Superintendent

August 30, 1985

The purpose of this letter is to solicit your help in nominating qualified professionals to assist the state of Montana in validating the National Teacher's Examination.

Starting July 1, 1986, persons seeking initial Montana teaching certification, reinstating lapsed certificates, or changing classes of certificates, will be required to obtain a minimum qualifying score on the core battery of the National Teacher's Examination (NTE). The State Board of Public Education can adopt such a cut score and have it be legally defensible (U.S. v. South Carolina, 1977), providing that our state supplies evidence of content validity and that the qualifying score has been empirically established. These determinations are made by using the judgments of persons representative of both teacher training programs and the elementary and secondary schools. The judgments are collected under standardized conditions, using a panel format.

Panelists are asked to devote one very full day to the task after a brief morning training session. They can attend the session at any one of the three following locations:

Missoula (University of Montana)  
Monday, September 30

Great Falls (College of Great Falls)  
Monday, October 7

Billings (Eastern Montana College)  
Monday, October 14

A more detailed explanation of the validation process is enclosed. Feel free to reproduce any material as needed.



August 30, 1985

Page 2

It is anticipated that nominations will be representative of Montana education without regard to sex, race, school size, geography, and so forth, so that a random selection procedure can be used. Persons nominated will receive a correspondence request for additional information. Those eventually selected will be given mileage and per diem by the state.

Your assistance in supplying the names and addresses of potential panelists would be appreciated. Please don't hesitate to nominate yourself. Submit your nominations in writing or by telephone to the following by September 13, 1985:

Dr. Alan Zetler  
P. O. Box 1002  
Dillon, Montana 59725  
Phone: Business: 683-7290  
Home: 683-4751

My name is connected to this project because I have contracted with the state of Montana to conduct the validation study on the NTE.

Sincerely,

ALAN ZETLER  
Test Validation Contractor

mec-co/500

Enclosure



## Appendix F

Nominees for Montana Validation Study: May not  
include higher education personnel selected internally  
for content review panel

Aaberge, Eileen	Worden
Ackley, William	Somers
Adock, Dan	Missoula
Agather, Linda	Kalispell
Agre, Diana D.	Conrad
Ainsworth, Mike	Stevensville
Albrecht, Barbara	Helena
Alder, Richard	Missoula
Allen, Ronald	Belt
Alterowitz, Harold	Billings
Anderson, Ann F.	Bozeman
Anderson, Avis	Glendive
Anderson, Gary	Chinook
Anderson, Grover	Bozeman
Anderson, James A.	Circle
Anderson, Joe	Helena
Anderson, Mike	White Sulphur Springs
Anderson, Patsy M.	Ronan
Anderson, Tom	Hamilton
Anfenson, Diane	Kalispell
Aschim, Sherry	Columbus
Ashcraft, Jay D.	Forsyth
Bachtold, Carolyn	Glasgow
Bailey, Charlene	Libby
Bailey, Malcolm	Billings
Bakker, Karen	Missoula
Balko, Michael J.	Great Falls
Banning, Margaret	Kalispell
Bashor, Mike	Shelby
Beals, Vivian A.	Billings
Bearing, Floyd J.	Lame Deer
Bearing, Rosalie	Lame Deer
Bedey, Frank	Hamilton
Bekker, Gerald	Havre
Beland, C. Sue	Livingston
Belangie-Nye, Jean	Missoula
Belcourt, Jean	Box Elder
Bell, Roberta	Harlem
Benke, Robert	Kalispell
Berg, Harry	Great Falls
Berg, Ken	Helena
Berg, Linda	Helena
Berger, Connie	Wolf Point
Bergman, Barbara A.	Billings
Bergman, Dean	Drummond
Bergstrom, Bruce	Broadus
Bertelson, Rita	Helena
Berzel, Carey	Conrad
Bidwell, Don	Broadus
Big Lake, Clara	Pryor
Big Man, Beverly W.	Crow Agency
Bigback, Cynthia A.	Busby



Bingeman, Doug  
 Bird, Nora A.  
 Birrer, Mike  
 Bjorndal, Larry  
 Black, Don  
 Black, Gaylene  
 Blacker, Edd  
 Blackman, Bert  
 Blair, Alida  
 Blanding, Keith  
 Blax, Gary  
 Blinn, Mary Beth  
 Boone, Sally  
 Brastrup, Rich  
 Brett, Carol  
 Brewington, Craig  
 Brinkman, Jo Ann  
 Brocklebank, Ruth  
 Brookins, Jack  
 Brown, Bob  
 Browning, Terry  
 Brunken, Norman  
 Bryant, Jo Ann  
 Boley, Bob  
 Boyer, Rod  
 Buchel, Josef  
 Bull, Fred  
 Bullcoming, Josephine  
 Bullshoe, Molly M.  
 Bunness, Dave  
 Burk, Jim  
 Burman, Don  
 Byars, Lia  
 Bylund, B.J.  
 Byrne, Judy  
 Byron, Catherine  
 Callahan, Joe  
 Callas, Bill  
 Campbell, Bruce  
 Campeau, Ray  
 Carlisle, James D.  
 Carlson, Bob  
 Carlson, Dennis  
 Carlson, Russ  
 Carter, Gayle M.  
 Carter, Harvey  
 Cartwright, Renee  
 Casagranda, Leroy  
 Casey, Sandy  
 Cates, Sheila  
 Caudle-Mosher, Barbara  
 Chalgren, Bill  
 Christensen, Lee  
 Christianson, Buzz  
 Christianson, Jeannette  
 Clark, Margaret

Moore  
 Lodge Grass  
 Harlowton  
 Miles City  
 Lewiston  
 Miles City  
 Bigfork  
 Alberton  
 Columbia Falls  
 Deer Lodge  
 Philipsburg  
 Conner  
 Great Falls  
 Belgrade  
 Missoula  
 Fort Benton  
 Billings  
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 Superior  
 Whitefish  
 Great Falls  
 Helena  
 Fairfield  
 Colstrip  
 Helena  
 Great Falls  
 Butte  
 Lame Deer  
 Heart Butte  
 Helena  
 Helena  
 Fairview  
 Havre  
 Fort Benton  
 Lewistown  
 Forsyth  
 Havre  
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 Helena  
 Bozeman  
 Culbertson  
 Missoula  
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 Philipsburg  
 Townsend  
 Bozeman  
 Helena  
 Helena  
 Thompson Falls  
 Libby  
 Polson  
 Billings  
 Great Falls  
 Ronan



Clary, Joan  
 Clow, Mike  
 Collins, Gloria  
 Colter, Bill  
 Comes at Night, Judy  
 Cook, Darrell  
 Cook, Kathy  
 Cooke, Joseph  
 Copps, Jack  
 Corne, Dick  
 Cotton, Linda  
 Coughlin, Can  
 Crasco, Violet  
 Crane, Allan  
 Croff, Clayton  
 Cronk, Cam  
 Cummings, Marge  
 Curdy, Gloria S.  
 Curdy, Willis  
 Curley, Georgia  
 Cypher, David  
 Danelz, Greg  
 Daughenbaugh, Judy  
 Davis, Gary  
 Davis, Ramona  
 Dean, Beth  
 DeGrandpre, Dan  
 Demien, Tammy  
 Demming, Bob  
 Dengel, Richard  
 Deters, James  
 DiBrito, Roger  
 Dill, Dixie  
 Dillman, Gene  
 Docktor, Robert  
 Dodge, Rebecca  
 Doney, Camie C.  
 Doney, Elizabeth  
 Doney, Hazel  
 Downey, Tim  
 Dryden, Mike  
 Drye, Gary  
 Du montier, Reginald T.  
 Dunning, Mary Mae  
 Dunnweber, Marian  
 Dwyer, Kathy  
 Eder, Geanne  
 Egeland, Aggie  
 Egli, Virginia  
 Elway, Elaine  
 Enman, Julia  
 Erickson, Harry  
 Erickson, Janet A.  
 Estenson, Joellen  
 Evans, Chuck

Dillon  
 West Yellowstone  
 Great Falls  
 Custer  
 Heart Butte  
 Havre  
 Corvallis  
 Missoula  
 Helena  
 Bozeman  
 Cascade  
 Helena  
 Dodson  
 Rocky Boy  
 Billings  
 Billings  
 Victor  
 Missoula  
 Missoula  
 Lame Deer  
 Dillon  
 Hamilton  
 Havre  
 Great Falls  
 Columbia Falls  
 Ekalaka  
 Helena  
 St. Regis  
 Great Falls  
 Grass Range  
 White Sulphur Springs  
 Missoula  
 Livingston  
 Whitehall  
 Helena  
 East Helena  
 Hays  
 Hays  
 Hays  
 Helena  
 Glendive  
 Arlee  
 Kalispell  
 Nashua  
 Arlee  
 Butte  
 Billings  
 Billings  
 Glendive  
 Great Falls  
 Philipsburg  
 Belgrade  
 Helena  
 Columbia Falls  
 Forsyth



Evans, Dave  
 Evans, Gary  
 Evans, Judy  
 Eveleigh, Carolyn  
 Everett, Judy  
 Faust, Bonnie  
 Feaver, Eric  
 Fenner, Arlene  
 Fenton, Judi  
 Ferguson, Shirley  
 Fero, John  
 Filcher, Cissy  
 Fink, Wayne  
 Fish, Denise  
 Fitzgerald, Janice M.  
 Flansburg, Deborah  
 Flatin, Beverly  
 Flemming, Teri  
 Floren, Ric  
 Flying, Beverly A.  
 Ford, Ann  
 Forsberg, Jodi K.  
 Fox, Joyce M.  
 Frank, Bruce  
 Franzen, Bess  
 Freakes, Helen  
 Fredrickson, Cheryl  
 Freshour, Don  
 Freshour, Marcia  
 Frost, Rayleen  
 Fryar, Bruce  
 Gadbow, Peggy  
 Galbavy, Mona F.  
 Garcia, Ricardo  
 Garner, Don  
 Garvey, Rose  
 Gatzke, Donald A.  
 Gebhardt, Ron  
 Girard, Norman  
 Gleason, Jude  
 Goes Ahead, Ruby  
 Goodsell, Karolyn  
 Gordon, Gayle  
 Gorseth, Lowell V.  
 Grammond, Roger  
 Green, Charlene  
 Gregory, Dick  
 Griffin, Shirley  
 Grinde, Wanda  
 Grueninger, Robert  
 Guenther, Glenn  
 Hagar, Chris  
 Haigh, Vi  
 Halverson, Jewel M.  
 Hansen, Walter

Havre  
 Bozeman  
 Billings  
 Victor  
 Helena  
 Missoula  
 Helena  
 Great Falls  
 Missoula  
 Nashua  
 Helena  
 Stevensville  
 Big Timber  
 Boulder  
 Laurel  
 Hays  
 Billings  
 Helena  
 Dodson  
 Lame Deer  
 Missoula  
 Disney  
 Hays  
 Roundup  
 Billings  
 Lame Deer  
 St. Regis  
 Polson  
 Great Falls  
 Great Falls  
 Missoula  
 Missoula  
 Box Elder  
 Billings  
 Kalispell  
 Butte  
 Kalispell  
 Sidney  
 Glasgow  
 Helena  
 Pryor  
 Dillon  
 Seely Lake  
 Billings  
 Baker  
 Butte  
 Livingston  
 Clancy  
 Billings  
 Billings  
 Fort Peck  
 Bigfork  
 Ennis  
 Billings  
 Anaconda



Harrell, Mary Alice  
 Harris, Edward J.  
 Harris, Judith  
 Hart, Alfretta  
 Hartman, Bernie  
 Harwood, Mindy  
 Havens, Lynn  
 Hawkins, Ed  
 Hawley, Hal  
 He Does It, Raphaelle A.  
 Head, Lyla  
 Heine, Jeanne  
 Henry, Steve  
 Hesse, Ted  
 Hewitt, Charles, Jr.  
 Hildeman, Jan  
 Hills, Violet  
 Hogemark, Robert  
 Holmen, Penny  
 Holmquist, Larry  
 Hopkins, Gerald  
 Horn, Nedra L.  
 Huffman, Tom  
 Hughes, Penny  
 Huhtanen, Dale  
 Hunt, Jim  
 Hunt, Julie  
 Hunter, James  
 Hurdle, Joan E.  
 Ikard, Mike  
 Imer, Richard  
 Irion, Susanna  
 Irons, Ralph  
 Isbell, Shirley  
 Isreal, Joe  
 Iverson, Glenn  
 Jackson, Donna  
 Jackson, Juanita S.  
 Jacobson, Roxanne  
 Jakupcak, Mike  
 Jakupcak, Jo  
 Jamruska, Rhoda  
 Jarvi, Pat  
 Jean, Ernie  
 Jefferson, Frances A.  
 Jensen, Lorraine  
 Jensen, Wilma  
 Jilot, Susan E.  
 Jimmerson, Bill  
 Johl, Detlef  
 Johnson, Cliff  
 Johnson, Dennis  
 Johnson, Jack D.  
 Johnson, Louella  
 Johnson, Martha

Helena  
 Billings  
 Livingston  
 Lame Deer  
 Helena  
 Polson  
 Kalispell  
 Columbia Falls  
 Broadus  
 St. Xavier  
 Livingston  
 Billings  
 Billings  
 Missoula  
 Chinook  
 Park City  
 Chester  
 Custer  
 Sidney  
 Belgrade  
 Roundup  
 Hays  
 Glendive  
 Great Falls  
 Drummond  
 Laurel  
 Wibaux  
 Lewistown  
 Colstrip  
 Conrad  
 Hardin  
 Bozeman  
 Billings  
 Havre  
 Joliet  
 Billings  
 Helena  
 Crow Agency  
 Winifred  
 Stevensville  
 Stevensville  
 Havre  
 Whitefish  
 Terry  
 Lodge Grass  
 Billings  
 Choteau  
 Bozeman  
 Conrad  
 Helena  
 Hamilton  
 St. Ignatius  
 Billings  
 Lodge Grass  
 Columbia Falls



Johnson, Mary M.	Box Elder
Johnson, Ralph	Columbia Falls
Johnson, Sandy	Hamilton
Johnston, Roger	Billings
Jones, Ken	Bozeman
Jones, Mark	Billings
Jones, Rosanne	Polson
Kaber, Larry	Kalispell
Kaphammer-Meyers, Susan	Florence
Kay-Rainingbird, Elizabeth	Box Elder
Keck, Dallas	Havre
Keim, Barbara	Billings
Keller, Larry	Sheridan
Kelley, Zoe	Missoula
Kelly, Lynn	Polson
Kelly, Terry	Whitehall
Kessler, Jerry	Billings
Ketterling, Erving (Jake)	Choteau
Kimmell, Virginia	Laurel
King, Carole	Worden
King, Donald	Clancy
King, Norma J.	Hays
Kjosén, Jane	Medicine Lake
Klawitter, Lillian J.	Missoula
Knapp, Roger	Hysham
Knight, Shelly	Corvallis
Knowshisgun, Bonnie	Lame Deer
Knudsen, George	Malta
Kober, Al	Columbus
Kober, Theodora	Whitehall
Koenig, Kerry	Bigfork
Kohl, John W.	Bozeman
Kojetin, Linda	Great Falls
Koke, Penny	Montana City
Koontz, Fred	Stanford
Korb, A.W.	Havre
Korb, Gus	Havre
Kosorok, Mike	Red Lodge
Kosteczko, Veryl	Darby
Kozeluh, Glenn	Missoula
Kraft, Dennis	Missoula
Kramer, Carol	Bigfork
Kransky, Janet	Malta
Krook, Marvin	Chester
Kuchenbrod, Julie	Helena
Kump, Alice	Hot Springs
Kunda, Vince	Big Timber
LaCounte, Marlene	Billings
LaFountain, Anthony J.	Lame Deer
Lande, Jean	Billings
Landis, Connie	Billings
Landowski, Sue	Bozeman
Lane, Ken	Billings
Lane, Susan A.	Sidney
Lankford, Rhonda K.	Harlem



Larance, Martha M.	Lame Deer
Lavinder, Dwain	Harlem
Lawson, Howard	Butte
Layman, Darrell	Glendive
Lee, Bill	Anaconda
Lee, Harry	Billings
Lee, Tom	Eureka
Lehl, Kim	St. Ignatius
Lewis, Gail	Hamilton
Lieber, Jan	Missoula
Limesand, Lennis	Chester
Liszak, Kathy	Arlee
Loney, Helen	Great Falls
Longhart, Fred	Kalispell
Longin, Jim	Havre
Lott, Johnny	Missoula
Luckowski, Jean	Missoula
Lukes, Bob	Florence
Lundt, John	Arlee
Luoma, Cindy	Fairfield
Lynch, Tina	Park City
Lynn, Peggy A.	West Yellowstone
Lytton, Ida	Pablo
MacMillan, Sally	Great Falls
Madden, George	Billings
Malee, Buddy	Butte
Malo, Eve	Havre
Mansfield, Barbara J.	Jordon
Mapston, Loenard	Lewistown
Markwald, Markwald	Sidney
Martin, Margaret	Hays
Matchett, Larry	East Helena
Mathews, Steve	Superior
Maxwell, Jennifer	Missoula
Maxwell, Margaret	Livingston
McCall, Cheryl M.	Billings
McCammon, Lillian	Helena
McCracken, Leah	Worden
McCrea, Alvin W.	Polson
McDonnell, Anthony	Florence
McGeshick, Joseph R.	Wolf Point
McIntosh, Kathy	Great Falls
McKenna, Kay	Helena
McLeod, Katie	Lockwood
McMurtry, Valerie	Billings
McNeill, Alex	Bozeman
McNeive, Pat	Lockwood
McRae, Cal	Glendive
McVay, Jerry	Missoula
McWilliams, Tim	Noxon
Meagher, Mike	Bozeman
Merrick, Linda	Kalispell
Meske, Kenneth	Great Falls
Meyer, Keith	Helena
Meyers, Patty	Great Falls



Michunovich, Mike  
 Miller, John  
 Moe, Mary  
 Mohler, Lynette  
 Moose, Dwight  
 Moren, Irene  
 Morris, Barbara  
 Morris, Shirlee  
 Morrison, Alma (Bunny)  
 Morrison, Bruce A.  
 Morse, Stanley A.  
 Moulds, Kathleen  
 Mueller, Sue  
 Mullan, Dan  
 Murray, Gene  
 Nave, Karen  
 Nelson, Cliff  
 Nelson, Laurie B.  
 Nesbit, Jack  
 Nessel, Donna  
 Nessel, Phyllis  
 Neu, Donald  
 Newberg, Alan  
 Newell, Larry C.  
 Newman, Carol  
 Newton, Carol  
 Nicaise, Richard  
 Nicholls, Lisa  
 Nichols, Ron  
 Nielsen, Kathleen  
 Niewoehner, Ramona  
 Nistler, Ron  
 Nolan, Jean  
 Nordquist, Ken  
 Oberly, Dave  
 Obert, Keith  
 O'Brien, James  
 O'Dell, Julie  
 O'Fallon, Terri  
 Old Crow, Martin F.  
 Old Mouse, Verna J.  
 Oliver, Jack  
 Olsen, Donald R.  
 Olson, Betty Jean  
 Olson, Hallie  
 Osowski, Mary Ellen  
 Ostwald, Gene  
 Ostwalt, Leonard  
 Paintner, Roberta  
 Palmer, Marjorie A.  
 Parisian, Barbara J.  
 Parisian, Deanna L.  
 Parisian, Ed  
 Parisian, Sarah J.  
 Parker, Ethel M.

Billings  
 Billings  
 Columbia Falls  
 Helena  
 Helena  
 Colstrip  
 Plains  
 Belfry  
 Billings  
 Frazer  
 Great Falls  
 Centerville  
 Billings  
 Victor  
 Bozeman  
 Billings  
 Seely Lake  
 Hardin  
 Miles City  
 Glendive  
 East Helena  
 Kalispell  
 Billings  
 Billings  
 Shepherd  
 Heart Butte  
 Deer Lodge  
 Stevensville  
 Stevensville  
 Culbertson  
 Bigfork  
 Billings  
 Forsyth  
 Great Falls  
 Billings  
 Joliet  
 Billings  
 Hardin  
 Ronan  
 Harlem  
 Lane Deer  
 Poplar  
 Chinook  
 Antelope  
 Fort Shaw  
 Lolo  
 Thompson Falls  
 Dillon  
 Darby  
 Billings  
 Box Elder  
 Box Elder  
 Rocky Boy  
 Box Elder  
 Box Elder



Pattee, Kathy  
 Patton, Guy  
 Pearce, Eileen  
 Pease, Olivia J.  
 Pelletier, Roger  
 Pepion, Carol A.  
 Perkins, Perkins  
 Peterson, Arlene F.  
 Peterson, Nancy  
 Petrick, Patty  
 Pickering, James  
 Pilcher, Christi  
 Platt, Ken  
 Pluhar, Bonnie  
 Plympton, Steven D.  
 Pohl, Mary  
 Polsin, James  
 Polston, Juanita  
 Poor, Jim  
 Porter, Barbara  
 Potter, Dianne M.  
 Prater, Tom  
 Prescott, Ardis G.  
 Price, Jon  
 Price, Ken  
 Putsche, Joyce S.  
 Quilling, Steve  
 Rathman, Stan  
 Raymond, Jack  
 Real Bird, Laura  
 Realbird, Margo  
 Reardon, Pat  
 Reddoor, Barbara L.  
 Reed, Vern  
 Regan, Jack  
 Rentz, Paul  
 Reynolds, John M.  
 Reynolds, Lloyd  
 Richards, Bob  
 Richardson, Lee  
 Richter, Robin L.  
 Rickard, Tricia  
 Riley, James  
 Ritter, Joan  
 Ritter, Paul  
 Robbins, Sandra  
 Roberts, John  
 Roberts, Mike  
 Roberts, Stella  
 Robertson, Thelma O.  
 Robinson, Bill  
 Robinson, Lana K.  
 Rosa, Jim  
 Rosbarsky, Mike  
 Rose, Joan

Bozeman  
 Billings  
 Colstrip  
 Billings  
 Dillon  
 Great Falls  
 Deer Lodge  
 Poplar  
 Great Falls  
 Sidney  
 Manhattan  
 Helena  
 Helena  
 Cutbank  
 Kalispell  
 Bozeman  
 Missoula  
 Great Falls  
 Bozeman  
 Missoula  
 Helena  
 Medicine Lake  
 Glasgow  
 Great Falls  
 Helena  
 Billings  
 Dutton  
 Choteau  
 Miles City  
 Lodge Grass  
 Crow Agency  
 Missoula  
 Box Elder  
 Thompson Falls  
 Miles City  
 Great Falls  
 Cut Bank  
 Choteau  
 Plentywood  
 Miles City  
 Billings  
 Glasgow  
 Missoula  
 Sidney  
 Great Falls  
 Choteau  
 Malta  
 Bozeman  
 Missoula  
 Shelby  
 Polson  
 Lame Deer  
 Butte  
 Missoula  
 Cascade



Rosette, Olive M.  
 Ross, Margaret  
 Rost, Bill  
 Ruddy, Pete  
 Rude, Dan  
 Running Wolf, Sharon  
 Russette, Frances M.  
 Russette, Sylvia L.  
 Rust, Bob  
 Salonen, Bill  
 Sargent, Doc  
 Sather, Marv  
 Sauer, Colleen  
 Schaffer, Rachel  
 Schauer, Arthur  
 Schlabs, Darryl W.  
 Schneckloth, Gwen  
 Schott, Carol L.  
 Scott, Jerry  
 Severson, Jim  
 Sexton, Mary  
 Shaffer, Kent  
 Shambo, Jean M.  
 Sheets, Mark  
 Sherrill, Barb  
 Shone, Frank  
 Silverman, Donna  
 Simmons, Donald  
 Simpson, Bruce  
 Singleton, Bob  
 Sioux Calf, Buella  
 Sioux Calf, Max  
 Skerritt, George  
 Sluiter, Virginia A.  
 Small, Gerald  
 Small, Mabel M.  
 Smith, Bernadette  
 Smith, Bob  
 Smith, Dave  
 Smith, Darlene  
 Smith, Gary  
 Smith, Gordon  
 Smith, Jerry  
 Smith, John  
 Smith, Jim  
 Smith, Lonnie  
 Smith, Tony  
 Solberg, Eileen  
 Sonneborn, Syd  
 Southern, Robert  
 Speare, Bonnie  
 Spangler, Cal  
 St. Goddard, Harold N.  
 Stands, Sharon N.  
 Stanford, Wayne

Box Elder  
 Bozeman  
 Bozeman  
 Lewistown  
 Missoula  
 Lane Deer  
 Box Elder  
 Box Elder  
 Malta  
 Great Falls  
 Libby  
 Libby  
 Lewistown  
 Billings  
 Libby  
 Nashua  
 Scobey  
 Big Timber  
 Bridger  
 Havre  
 Hamilton  
 Cut Bank  
 Hays  
 Thompson Falls  
 Butte  
 Helena  
 Butte  
 Missoula  
 Ronan  
 Laurel  
 Lane Deer  
 Lane Deer  
 Glendive  
 Hingham  
 Box Elder  
 Lane Deer  
 Pryor  
 Sheridan  
 Missoula  
 Missoula  
 Chinook  
 Forsyth  
 Great Falls  
 Eureka  
 Rudyard  
 Ronan  
 Troy  
 Billings  
 Miles City  
 Jordan  
 Livingston  
 Rudyard  
 Hardin  
 Pryor  
 Stevensville



Stearns, Hal Jr.  
 Stephanie, Marvin  
 Stidman, Garry  
 Stokke, Athlene  
 Stone, Marie C.  
 Stops, Bill  
 Strange Owl, David  
 Strom, Marvin  
 Sturgis, Jack  
 Stuber, Rick  
 Sulser, Sid  
 Summersille, Karen  
 Sunchild, Florence E.  
 Sunchild, Gaye  
 Surwill, Benedict J.  
 Surwill, Susan J.  
 Swan, Ryan  
 Swenson, Lyle  
 Swenson, Thea  
 Swingle, David  
 Tange, Jean  
 Tarantino, Donna  
 Taylor, Webb  
 Thall, Terry  
 Thiesin, Lillain  
 Thompson, Betty  
 Thompson, Orvil  
 Thompson, Thomas A.  
 Thornton, Dick  
 Tibbs, Patricia  
 Tierney, Pat  
 Tilton, Bobbi  
 Todd, Jim  
 Tollefson, Berniece  
 Topley, Charles  
 Torgerson, Shirley R.  
 Townsend, Barbara  
 Trerise, Dick  
 Troy, Kathleen  
 Tucker, Philomayne  
 Tuss, Jerome  
 Tustin, Wyatt  
 Ullman, Ronald  
 Ulrickson, Virginia  
 Van Deventer, Nancy  
 Vandegrift, Margaret  
 Vandekop, Frances  
 Vehrs, Teri  
 Veormans, Margo  
 Verschoot, Sandra  
 Vogt, Bill  
 VonKuster, Lee  
 Waite, Debra  
 Waldron, Bob  
 Walker, Al

Missoula  
 Poplar  
 Glasgow  
 Vaughn  
 Great Falls  
 Wyola  
 Lame Deer  
 Great Falls  
 Missoula  
 Culbertson  
 Glasgow  
 Great Falls  
 Box Elder  
 Great Falls  
 Billings  
 Billings  
 Kalispell  
 Terry  
 Helena  
 West Yellowstone  
 Plentywood  
 Great Falls  
 Deer Lodge  
 Great Falls  
 Bozeman  
 Kalispell  
 Superior  
 Browning  
 Big Sandy  
 Corvallis  
 Havre  
 Missoula  
 Missoula  
 Wolf Point  
 Shelby  
 Missoula  
 Bozeman  
 Lincoln  
 Augusta  
 Dodson  
 Helena  
 Helena  
 Red Lodge  
 Wolf Point  
 Bozeman  
 Dillon  
 Dutton  
 Whitefish  
 Missoula  
 Ronan  
 Kalispell  
 Missoula  
 Bozeman  
 Wolf Point  
 Absarokee



Walker, Diane  
 Walker, Dick  
 Walker, Don  
 Warwood, Byrdeen  
 Watson, Raymond E.  
 Watts, Dan  
 Waymire, Jess V.  
 Weast, Jerry  
 Webster, Dennis F.  
 Weller, Joan  
 Wendland, Sue  
 Weston, Sharon  
 Wetterling, Lynn  
 Wetzell, Patti  
 Whalen, Wanda  
 White, Carol  
 White, Don W.  
 Whitmer, Jerry  
 Whitney, Todd  
 Widhalm, Don  
 Widenhofer, Helen  
 Williams, Barry  
 Willims, Helen  
 Williams, Larry  
 Williams, Marvin D.  
 Wilson, Denny  
 Wilson, Steve  
 Wood, Lisa  
 Woodhouse, Judy  
 Woodmansey, Robert F.  
 Woyciechowicz, Suzanne  
 Yaeger, Anne  
 Yassenak, Hank  
 Yeagle, Bill  
 York, Marta  
 Young, Wayne  
 Zier, Ron  
 Zorn, Dale  
 Zuelke, Gordon  
 Zulke, Mary Ann

Sun River  
 Simms  
 Libby  
 Bozeman  
 Havre  
 Fairview  
 East Helena  
 Great Falls  
 Ronan  
 Billings  
 Rudyard  
 Stevensville  
 Helena  
 Laurel  
 St. Ignatius  
 Havre  
 Lewistown  
 Billings  
 Circle  
 Broadview  
 Billings  
 Missoula  
 Boulder  
 Bozeman  
 Conrad  
 Darby  
 Deer Lodge  
 Billings  
 Polson  
 Great Falls  
 Florence  
 Helena  
 Billings  
 Ulm  
 Missoula  
 Hays  
 Manhattan  
 Shelby  
 Helena  
 Helena



## Appendix G

MONTANA VALIDATION  
NATIONAL TEACHERS EXAMINATION CORE BATTERY

TO: Nominees

FROM: Dr. Alan Zetler, Validation Contractor

RE: Nominee Response Form

Greetings! You have been nominated as one who could well represent our state to validate the Core Battery of the National Teachers Examination which will become effective for new certificate applicants on July 1, 1986. A brief description of the process can be found on the enclosure "Validating the NTE Core Battery for Montana": What is the Process?"

If you would like to be included in a pool of professionals from which the final panel members will be selected, please fill out the reverse side of this sheet and mail to Dr. Alan Zetler, Box 1002, Dillon, Montana 59725 by September 20, 1985.

This project has been designed to move very rapidly, so response time is extremely short. Your immediate reaction will enable successful nominees and their employers to be notified by September 25. Should you choose not to be considered further, simply do not return this form.

Some critical points for your consideration:

1. Once the panelists are selected, a high degree of commitment will be needed. Therefore, if there is a chance you may not be available for the meeting date, other than emergency, it would be best to decline this request.
2. The project is attempting to involve administrators and agency heads through their professional organizations. However, these individuals will not know the entire list of nominees. They will be informed only if one or more of their employees is chosen to actually serve. It is possible that conditions will not permit some persons to be released from duty. That decision is strictly a local internal matter. You might want to check the administrative channel to see if your responsibilities could be covered.
3. To minimize expense and time, only the final panelists selected will be notified. If you submit this response sheet and do not hear of your selection, please accept Montana's thanks for your willingness. This is a case of "don't call us -- we'll call you!" The names of the nominees and the eventual panelists will be part of a report to the State Board of Public Education and becomes public knowledge.

Enclosure

(over)



VALIDATING THE NTE CORE BATTERY FOR MONTANA:  
WHAT IS THE PROCESS?

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Any state using a qualifying test score as a condition for certification is legally required to validate the test being used. Since the Montana State Board of Public Education has mandated that the core battery of the National Teachers Examination (NTE) be employed, a process of assessing the content validity of that exam is being undertaken. The results will determine if the NTE Core Battery is appropriate for the population of Montana certificate applicants and what minimum qualifying score should be expected. Dr. Zetler is acting as a contractor to conduct the validation study for the State of Montana.

The NTE Core Battery tests three areas: A) communication skills, including listening, reading, and writing; B) general knowledge of literature, fine arts, mathematics, science, and social studies; and C) professional knowledge of the teaching profession including implementation of instruction.

Validation of the NTE serves to answer three questions:

1. Do the items on the test match the exposure that candidates have had in teacher training?
2. How relevant are the test items to the job of a beginning Montana teacher?
3. For each item on the test, what percent of minimally qualified candidates could be expected to respond correctly?

To answer these questions, professional educators are convened and their judgments become the basis for data collection. At each location, three separate tasks are performed by separating into three panels. These panels are known as Content Review, Job Relevance, and Knowledge Estimation, respective to the three questions being addressed. The Content Review panel is normally composed of people from the teacher education institutions as they have to know the courses and objectives required of candidates. Teacher education students can serve on this panel. Job Relevance panel members are usually teachers and administrators from the elementary and secondary schools. They can judge what a beginning teacher needs to know and gauge the test questions accordingly. Knowledge Estimation is effected by bringing the first two panels together so that all levels of educators can estimate item difficulty. In all cases, panelists reach their judgments individually and privately record them on forms provided, after which the results are tabulated and analyzed.

Panel members will be asked to judge items in all test areas (communications, general knowledge, and professional knowledge) and should therefore possess broad perspective on the requirements of a teacher. This criterion certainly does not preclude subject specialists, however.

The format of the Montana study has the following scenario. Three different groups of the three panels will be convened at the following locations: Missoula on September 30; Great Falls on October 7; and Billings on October 14; and each site will pursue the three tasks independently. Panels will begin work at 9 a.m., break for lunch, and finish around 5 p.m. If problems develop or more time is needed by individuals, work will continue later that day as necessary. In the morning, a training session will be held. Standard forms are provided for recording judgments.

(over)



The State will provide mileage and per diem, including lodging for those needing extra time in addition to the Monday meeting date. Assistance and support from administrators and agency heads is being sought to cover the duties of those selected as panelists.

Nominations are being solicited from organizations and agencies with whom potential panelists may be associated. Nominees will be sent additional information and a request for biographical data on themselves. Selection of approximately 70 panelists will be made during the third week of September and notifications made to the panelists and their administrators.

This project is being done for the State of Montana. The work will be tedious but very important. If questions arise, please call or write to Dr. Alan Zetler, Box 1002, Dillon MT 59725 (683-7290 work; 683-4751 home).

cmw26



## Appendix H

No. \_\_\_\_\_

## Montana Validation Nominee Response Form

Note: If you do not wish to respond to any item, please designate "NR".

Name \_\_\_\_\_

Address \_\_\_\_\_

Home Phone \_\_\_\_\_

Business Phone \_\_\_\_\_

District or Agency Employer \_\_\_\_\_

Current Position by Grade Level or Subject \_\_\_\_\_

Years Experience in Current Position \_\_\_\_\_

Total Years Experience in Education \_\_\_\_\_

Educational Attainment by Degree \_\_\_\_\_

Male \_\_\_\_\_ Female \_\_\_\_\_

Race or Ethnic Distinction \_\_\_\_\_

Could Attend Panel Meeting at What Nearest Location?

September 30 - Missoula \_\_\_\_\_

October 7 - Great Falls \_\_\_\_\_

October 14 - Billings \_\_\_\_\_

Additional Comments About Your Qualifications:



## Appendix I

## School Enrollment by Size, FY 1985

Data is available on a computer printout prepared by Steve Colberg, Office of Public Instruction, Helena, Montana. Printing was initially done on 08/26/85. The title is For FY 85 Mailcode Enrollment By Size.

Each school in Montana is classified by the following headings:

Type of school, i.e., Elementary, Jr. High, etc.

County in which located

Identification numbers

School name

Enrollment

Inclusive grades served

District enrollment

Aggregate state enrollment up to and including the school's position on the ranking

District name

Ranking, from 1 to 779, smallest to largest, within all Montana schools



## Appendix J

Random Number Lists used to Select Members of  
Job Relevance Panel, N = 36

Process: Bibliographical sheets from respondents were consecutively numbered as returned by mail, using a printing counter. The counter started at 2428 and finished at 2713.

The last three digits of a table of random numbers were used, the hundreds place starting with 4, 5, 6 or 7 and inclusive of the numbers 428 through 713\*. When a total of nine was selected for a quartile of school size, the selection stopped for that size category. Selection continued until all quartiles were filled with nine names. Response sheets were then examined for sufficient address information. Deficient sheets were discarded and selection began again to bring quartiles back up to nine names. The numbers selected by the table were as follows:

578	702	463
458	541	434
638	631	513
553	631	551
676	628	662
698	523	452
518	681	611
684	492	673
644	691	537
612	623	622
483	589	670
646	666	710
600	441	672

\*Source: Beyer, William H. ed. "A Table of 14,000 Random Units." Handbook of Tables for Probability and Statistics. Cleveland, Ohio: The Chemical Rubber Company, 1966. p. 198-201



## Appendix K

Panelists Who Participated in Validation Study  
and Authorized Release of Names

## Job Relevance Panel

Anderson, Jim	Circle Public Schools Circle, MT 59215
Bailey, Malcolm	School Dist. No. 2 Billings, MT 59102
Christensen, Lee	Polson School Dist. No. 23 Polson, MT 59860
Estenson, Jo Ellen	School Dist. No. 6 Columbia Falls, MT 59912
Filcher, Cissy	Stevensville Public Schools Stevensville, MT 69870
Freakes, Helen	School Dist. No. 6 Lame Deer, MT 59043
Haigh, Violet	Madison Co. School Dist. #52 Ennis, MT 59729
Hilderman, Janice	School Dist. No. 2 Park City, MT 59063
Hunt, Julie	School Dist. No. 6 Wibaux, MT 59353
Hunter, Jim	School Dist. No. 1 Lewistown, MT 59457
Keim, Barbara	Billings Public Schools Billings, MT 59102
Kosteczko, Veryl	Darby Public Schools Darby, MT 59829
Kramer, Carol Ann	Bigfork Public Schools Bigfork, MT 59911
Lawson, Howard	Butte School Dist. No. 1 Butte, MT 59701
Lee, Bill	School Dist. No. 10 Anaconda, MT 59711



McLeod, Katie	Lockwood Public Schools Huntley, MT 59037
Miller, John	School Dist. No. 2 Billings, MT 59101
Morris, Shirlee	School Dist. No. 34 Belfry, MT 59008
Morse, Stan	School Dist. No. 1 Great Falls, MT 59405
Murray, Gene	School Dist. No. 7 Bozeman, MT 59715
Nelson, Cliff	School Dist. No. 34 Seeley Lake, MT 59868
Smith, Darlene	Missoula Public Schools Missoula, MT 59801
Stanford, Wayne	Lone Rock School Dist. No. 13 Stevensville, MT 59870
Taylor, Webb	Powell County School Dist. Deer Lodge, MT 59722
Tilton, Bobby	School Dist. No. 1 Missoula, MT 59801
Vandergrift, Margaret	School Dist. No. 10 Dillon, MT 59725
Vandeventer, Nancy J.	School Dist. No. 7 Bozeman, MT 59715
Weast, Jerry	Great Falls Public Schools Great Falls, MT 59403
Woodmansey, Bob	School Dist. No. 1 Great Falls, MT 59405



## Content Review Panel

Abel, Frederick J.	Montana State University Bozeman, MT 59715
Anderson, Harold S.	College of Great Falls Belt, MT 59412
Beaulieu, Margaret	College of Great Falls Great Falls, MT 59405
Bekker, Gerald	Northern Montana College Havre, MT 59501
Cypher, Terrance	Western Montana College Dillon, MT 59725
Freeman, Sally A.	University of Montana Missoula, MT 59812
Garcia, Ricardo	Eastern Montana College Billings, MT 59105
Hausmann, Robert B.	University of Montana Missoula, MT 59812
Hauwiller, James G.	Montana State University Bozeman, MT 59715
Hughes-Briant, P. A.	College of Great Falls Great Falls, MT 59401
Korb, Gus	Northern Montana College Havre, MT 59501
Lee, Harry F.	Eastern Montana College Billings, MT 59102
Leith, Larry	Western Montana College Dillon, MT 59725
Masters, James S.	Rocky Mountain College Billings, MT 59102
McRae, Robert J.	Eastern Montana College Billings, MT 59102
Melling, Duane	Montana State University Bozeman, MT 59715
Mohler, Lynette	Carroll College Helena, MT 59625



Nelson, George R.	Rocky Mountain College Billings, MT 59102
Polson, James H.	University of Montana Missoula, MT 59812
Renz, Paul	College of Great Falls Great Falls, MT 59401
Riley, James D.	University of Montana Missoula, MT 59812
Sexton, Ronald P.	Eastern Montana College Billings, MT 59102
Simonis, Doris A.	University of Montana Missoula, MT 59812
Snavely, A. Eloise	Western Montana College Dillon, MT 59725
Strohmeyer, Eric	Montana State University Bozeman, MT 59715
Taylor, James	Rocky Mountain College Billings, MT 59102
Tierney, Thomas P.	Northern Montana College Havre, MT 59501
Von Kuster, Lee N.	University of Montana Missoula, MT 59812
Worrest, Henry N.	Western Montana College Dillon, MT 59725

Note: Four participating panelists did not release names for listing. Ten other panelists were selected but were not able to participate. Since no release forms were signed, their names are not listed.



## Montana NTE Core Battery Validation

## Release Form

Name \_\_\_\_\_

Check One

— I agree to have my name, address and professional responsibility included as part of the final validation report to the State Board of Public Education. I understand that the report will be public knowledge.

— I do not wish to have my name, address and professional responsibility included as part of the final validation report to the State Board of Public Education.

Signature \_\_\_\_\_



[illegible]



Item No.	Crucial	Important	Questionable	Not Relevant
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				
31.				
32.				
33.				
34.				
35.				
36.				
37.				
38.				
39.				
40.				
41.				
42.				
43.				
44.				
45.				

Knowledge Estimation (check one)

[illegible]



Reviewer \_\_\_\_\_

Site \_\_\_\_\_

Knowledge Estimation  
(check one)

[illegible]



Knowledge Estimation  
(check one)

Item No.	Yes	No	DNK
24.			
25.			
26.			
27.			
28.			
29.			
30.			
31.			
32.			
33.			
34.			
35.			
36.			
37.			
38.			
39.			
40.			
41.			
42.			
43.			
44.			
45.			

[illegible]



NAME \_\_\_\_\_

## MONTANA CLASSIFICATION SHEET

Directions: Please check the appropriate line for each essay.

Minimally Qualified or Better/Pass	Unqualified/ Fail	Minimally Qualified or Better/Pass	Unqualified/ Fail
A _____	_____	Y _____	_____
B _____	_____	Z _____	_____
C _____	_____	AA _____	_____
D _____	_____	BB _____	_____
E _____	_____	CC _____	_____
F _____	_____	DD _____	_____
G _____	_____	EE _____	_____
H _____	_____	FF _____	_____
I _____	_____	GG _____	_____
J _____	_____	HH _____	_____
K _____	_____	II _____	_____
L _____	_____	JJ _____	_____
M _____	_____	KK _____	_____
N _____	_____	LL _____	_____
O _____	_____	MM _____	_____
P _____	_____	NN _____	_____
Q _____	_____	CO _____	_____
R _____	_____	PP _____	_____
S _____	_____	QQ _____	_____
T _____	_____	RR _____	_____
U _____	_____	SS _____	_____
V _____	_____	TT _____	_____
W _____	_____	UU _____	_____
X _____	_____	VV _____	_____



Minimally Qualified or Better/Pass	Unqualified/ Fail	Minimally Qualified or Better/Pass	Unqualified/ Fail
WW _____	_____	HHH _____	_____
XX _____	_____	III _____	_____
YY _____	_____	JJJ _____	_____
ZZ _____	_____	KKK _____	_____
AAA _____	_____	LLL _____	_____
BBB _____	_____	MMM _____	_____
CCC _____	_____	NNN _____	_____
DDD _____	_____	OOO _____	_____
EEE _____	_____	PPP _____	_____
FFF _____	_____	QQQ _____	_____
GGG _____	_____	RRR _____	_____

gmh34



## NTE Validity Study Content Description

## (61) LISTENING

	<u>Approximate % of Test</u>
I. Basic Comprehension of Message (includes paraphrasing message, understanding connotations of words, and summarizing major idea)	37
II. Analysis of Message (includes identifying assumptions, drawing inferences, recognizing implications, and identifying speaker's tone)	30
III. Evaluation of Message (includes identifying and evaluating logical structure, assessing appropriateness and effectiveness of supporting material, and evaluating effect of speaker's tone on an audience)	18
IV. Feedback-Response (includes identifying appropriate responses to questions or dialogues)	15



## NTE Validity Study Content Description

## (62) READING

	<u>Approximate % of Test</u>
I. Comprehension	50
The ability to understand accurately and completely the explicit content of a written message	
1. Main Idea	
2. Detail	
e.g., Definition - word, phrase, etc.	
Supporting Ideas	
3. Relationships	
e.g., Sequence	
Cause and Effect	
4. Paraphrase/Summary	
II. Analysis	35
The ability to clarify a written message and to understand how it is organized and conveys its message	
1. The writer's purpose	
2. The writer's assumptions	
3. The writer's attitude or tone	
4. Implications of the message	
Inferences from the message	
5. Fact vs. opinion in the message	
6. Organization of the message	
7. Use of language in the message	
8. Application of elements in the message	
III. Evaluation	15
The ability to make reasoned qualitative judgments about the nature and merits of a written message	
1. Emotional or manipulative aspects of the message	
2. Strengths and/or weaknesses of the argument	
3. Relevance and/or appropriateness of supporting evidence, arguments	
4. Relation of the message to the audience and/or to the general universe of the topic	



## NTE Validity Study Content Description

(64) WRITING--MULTIPLE CHOICE

	<u>Approximate % of Test</u>
I. Usage - including capitalization and punctuation, subject-verb agreement, verb form, pronoun problems, parallelism, diction, idiom, structural problems, and adjective-adverb confusion	55
II. Sentence Correction - including problems of coherence, word order, economy of statement, appropriateness of diction and choice of idiom, subordination of sentence elements, logical comparison structure, and clarity of modification and pronoun reference	45



## NTE Validity Study Content Description

(65) LITERATURE AND FINE ARTS

	<u>Approximate % of Test</u>
I. Recognizing basic elements and components of works of literature and fine arts	29%
II. Analyzing and interpreting works of literature and fine arts	54%
III. Relating works of literature and fine arts to one another and to their social/historical context	17%



## NTE Validity Study Content Description

(66) MATHEMATICS

	<u>Approximate % of Test</u>
I. Has good number sense and understands how numbers behave	20%
II. Understands and uses numbers in an appropriate way to quantify thinking	16%
III. Recognizes and uses mathematical relationships	24%
IV. Understands the mathematical basis of measurement	16%
V. Understands deductive reasoning	12%
VI. Can interpret graphic, symbolic, and verbal material	12%



## NTE Validity Study Content Description

(67) SCIENCE

	<u>Approximate % of Test</u>
I. Demonstrates understanding of energy relationships in both living and nonliving contexts	11%
II. Demonstrates understanding of the significant features of living things	11%
III. Demonstrates understanding of the fact that the operation of natural processes has resulted in organisms that fill a vast number of ecological niches and that these organisms are usually classified on a structural basis into a small number of categories, which facilitate the understanding and study of the organisms	11%
IV. Demonstrates understanding of the relationships between living organisms, particularly humans, and the environment	11%
V. Demonstrates understanding of the fact that Earth is both a part of the Universe and a body that has special characteristics	11%
VI. Demonstrates understanding that all matter is composed of atoms, that atoms are divisible, and that atoms undergo combinations	11%
VII. Demonstrates understanding of the forces that act on units of matter	11%
VIII. Demonstrates understanding of the methods of science: the kinds of reasoning and the organization of information that have contributed to the development of science	11%
IX. Demonstrates understanding of the role of science in securing and maintaining important human values	11%



## NTE Validity Study Content Description

(68) SOCIAL STUDIES

	<u>Approximate % of Test</u>
I. Understanding the forces which have influenced the evolution and current state of human culture and institutions	25%
II. Understanding the behavior of individuals, of small groups, and of social institutions and the inter-relationships among individuals, groups, and social institutions	25%
III. Recognizing both the universal features of world culture and history, and the basic differences among cultural and national units	25%
IV. Possessing the essential tools and the balanced perspective to analyze and make informed judgments about society	25%

The topic areas above will be related to the following specific subject matter: major U.S. historical and cultural events and movements; political institutions and political values; prominent characteristics of societies and cultures (e.g., patterns of social change, political organizations, political values); relationship between culture and individual (e.g., processes and patterns of prejudice, stereotyping, and discrimination); economic concepts and processes; geographical features and characteristics of human settlement and culture; and methodologies, methodological tools, and resources of social sciences.



## NTE Validity Study Content Description

(69) PROFESSIONAL KNOWLEDGE

	<u>Approximate % of Test</u>
I. Planning objectives, diagnosing needs, identifying resources, and designing instruction	24%
II. Implementing conditions that facilitate learning and instructional design	25%
III. Evaluating student achievement and instructional effectiveness and using evaluation data to refine instruction	17%
IV. Recognizing students' constitutional rights and state, federal, and judicial policy and the implications for classroom practice	9%
V. Recognizing extra-classroom influences on teachers and students, including school policy, community expectations, the media, and children's developmental patterns	11%
VI. Demonstrating knowledge of the teaching profession and of professional teaching behaviors	14%



## Montana NTE Core Battery Validation

## Emphasis Evaluation

Reviewer \_\_\_\_\_

College/University \_\_\_\_\_

Site \_\_\_\_\_

Compared to our institutional program, the emphasis stated for the NTE core battery is as follows: (Check one)

	Less	Same	More	DNK
Communication Skills				
Listening I				
II				
III				
IV				
Reading I				
II				
III				
Writing I				
II				
General Knowledge				
Lit & Fine Arts I				
II				
III				
Mathematics I				
II				
III				
IV				
V				
VI				
Science I				
II				
III				
IV				



## Emphasis (cont.)

		Less	Same	More	DNK
Science	V				
	VI				
	VII				
	VIII				
	IX				
Social Studies	I				
	II				
	III				
	IV				
Professional Knowledge					
PK	I				
PK	II				
PK	III				
PK	IV				
PK	V				
PK	VI				



Emphasis (cont.)

I wish to comment on the NTE core battery emphasis. (Please use the content description terms and numerals as references)



## Appendix O

### Computer Data Compilation and Analysis

The Program was written by John Hammond, Specialist at Western Montana College, Dillon, Montana 59725.

For each subtest, excluding essay, three outputs were printed:

1. Job Relevance and Knowledge Estimation
2. Content Review and Knowledge Estimation
3. Combined Knowledge Estimation

Frequency distributions were made by item (row) and by variable (column). Knowledge estimation distributions means and standard deviations were computed for rows and columns. Mean and standard deviations for subtests were printed.

First run printouts were done November 14, 1985, with second print on December 23, 1985. Printouts are on file with the Montana Office of Public Instruction.



## Appendix P

## Procedures for Transforming Mean Raw Percent Scores to Mean Raw Scores

The purpose of the transformation is to convert the percentage of minimally qualified examinees who are estimated to know correct answers into the number of items per subtest that would be marked correctly. Inherent in the conversion are several assumptions:

1. Examinees who do not know correct responses will guess correctly by a predictable amount.
2. Items found to be non-relevant (NR) or non-content appropriate (NCA) by the validation study will not be known by Montana examinees.
3. NR and NCA items will be correctly guessed in predictable numbers.

Procedures applicable to the NTE Core Battery Tests are taken from the ETS draft A Manual for Doing Content Validity Studies for NTE Programs Tests, chapter IV. See the second chapter of this study for bibliographic citation.

The transformation is outlined as follows, with the Literature and Fine Arts subtest calculations exemplified:

## Part A: Knowledge Factor

1. Determine the number of usable items (relevant and content appropriate) per subtest.  $35 - 9 = 26$
2. Multiply subtest mean percentage by the number of usable items. (This is equal to adding means across usable items)  $26(43.12) = 1121.12$
3. Change to a proportion by multiplying by .01. This yields the number of items that would be correctly known.  $.01(1121.12) = 11.21$

## Part B: Guessing Factor for Those Not Knowing Correct Answers

1. Calculate the percentage of examinees who would not know answers.  $100 - 43.12 = 56.88\%$
2. Multiply percent now knowing by the number of usable items. (Equal to adding across usable items)  $26(56.88) = 1478.88$
3. Multiply step 2 by guessing probability (.25 for listening skills, .20 for all other five-choice items).  $.2(1478.88) = 295.78$
4. Change to proportion using .01 factor. This yields the number of usable items on subtest that would be correctly guessed.  $.01(295.78) = 2.96$



## Part C: Guessing factor for NR and NCA items

- |  |                                     |
|--|-------------------------------------|
| 1. Determine the number of different NR and NCA items on subtest.  | 9 items on Literature and Fine Arts |
| 2. Multiply by guessing probability.<br>This yields the number of NR and NCA items that examinees would guess correctly per subtest. | $.2(9) = 1.80$                      |

## Part D: Factor for Non-Classified Items

Not required on Montana study as all items were classified.

## Part E: Sum of parts A - D to Arrive at Mean Raw Score for Subtest

A. Knowledge factor	11.21
B. Guessing factor	2.96
C. NR/NCA guessing factor	1.80
D. (Not applicable)	<hr/>

Total Mean Raw Score for Literature and Fine Arts	15.97
---	-------

The total represents the number of items on the subtest estimated to be correctly marked by examinees.



## Appendix Q

STUDY SCORES AND QUALIFYING SCORES  
FOR  
NTE CORE BATTERY TESTS

	Report Date	Study Number	Purpose	CS		GK		PK	
				S	Q	S	Q	S	Q
California	1983	19	C	not studied		?	600	not studied	
Indiana	1985	34	C	659		655		640	
Kentucky	1983	13	C	663	643	658	637	661	641
Louisiana	1983	15	C	652	645	651	644	652	645
Maryland	1985	36	C	661	DP	655	DP	644	DP
Mississippi	1983	21	C	652	641	647	636	650	639
New Jersey (MI) (MII)	1984	33	C	658 660	*	656 658	624	not studied	
New Mexico	1983	18	C	656	644	657	645	642	630
New York (MI) State (MII)	1983	22	C	656 657	650	656 656	649	652	646
North Carolina	1983 (a)	23	C	not studied		not studied		644	644
	1983 (b)	24	P	636	632	631	627	not studied	
Tennessee	1984	29	C,L	622	640	658	637	655	631
Virginia	1984	25	C	651	649	641	639	641	639
Indiana (December)	1985	-	C	-	653	-	645	-	646

CS = Communication Skills  
GK = General Knowledge  
PK = Professional Knowledge

DP = Decision Pending  
MI = Method I Analysis  
MII = Method II Analysis

S = Study Score  
Q = State Qualifying Score

C = Certification  
P = Program Entry  
L = Career Ladder

\*Qualifying score not required at this time

revised 6/25/85

revised by contractor 12/30/85  
(source ETS)





